Railway Age

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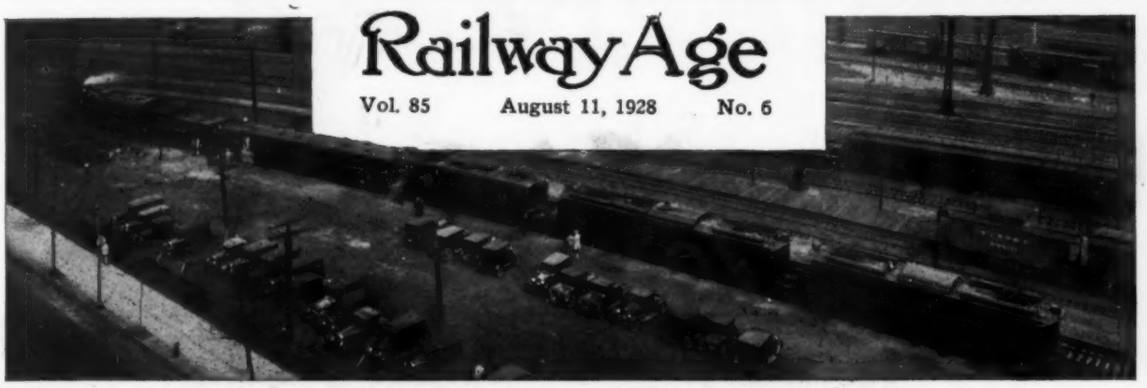

Track Exhibit at N. Y., N. H. & H. Yards, New Haven, Conn., at Recent A. I. E. E. Meeting

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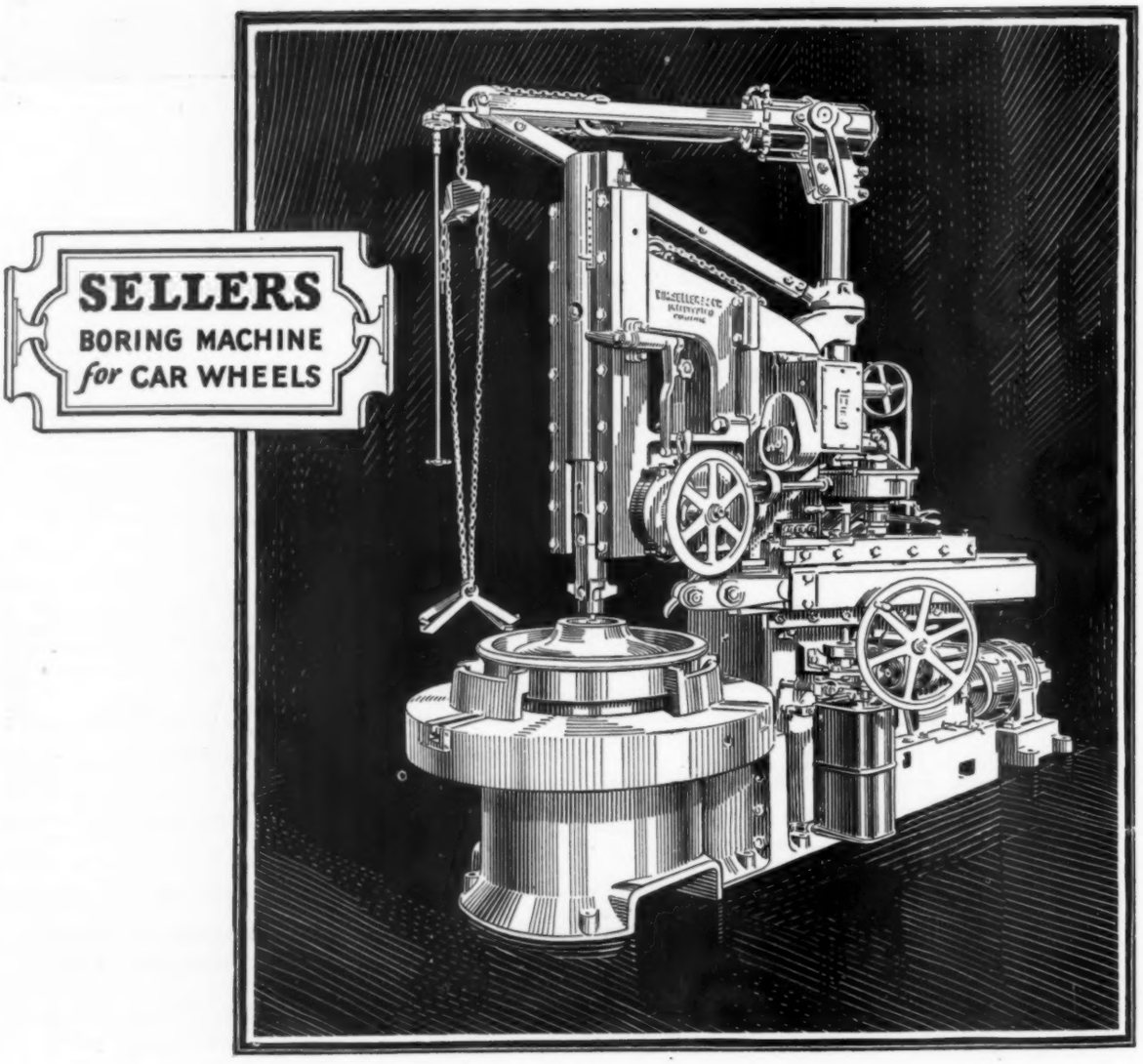
SELLERS
BORING MACHINE
for CAR WHEELS

Railway Age

Vol. 85, No. 6 August 11, 1928

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All-Expense Tours by Train and Motor Coach

ALL-EXPENSE tours, on which passengers are taken by a co-ordinated operation of trains and motor coaches to regions of scenic or historic attraction, are gaining in popularity. Several western roads have been offering such tours for several years with marked success. Recently the Boston & Maine inaugurated a series of 18 all-expense tours covering its territory in New England. In this particular case, the tours are so arranged that regular trains and motor coaches are used to handle most of the business, and the increase in the number of motor coach miles necessary to accommodate the special tours is very small. In consequence, the new business that the tours are developing is being handled at a low additional cost. By the operation of motor coaches in tour service, railways have been enabled to cultivate the traffic building qualities of a number of regions which formerly were virtually worthless from this standpoint. As examples, the territory in and about Santa Fe, N. M., was comparatively without value from a traffic standpoint until the Santa Fe established its motor coach tours in that region, and, similarly, the Zion National Park territory in southern Utah was comparatively unknown until the Union Pacific established motor coach service through this region. More motor coach tours operated by railways in connection with their rail services are anticipated. Such tours generally are not only profitable in themselves, but they have been found to develop additional passenger business also for the railways.

Rough Handling

THE success of various campaigns, such as for safety, claim prevention and rough handling, has been noteworthy. Practically every railway has reduced rough handling, among the outstanding performances in this direction being a yard in the east where over three hundred thousand cars were humped without damage to a single car, and a division in the southwest which handled nearly seventy thousand cars in one month without a single case of rough handling or car damage. Despite such results in numerous places, much remains to be done. The efforts being made to reduce rough handling are entering upon a new phase. Hitherto, in the majority of cases, the idea of a mass attack on rough handling was new and had to be sold to the employees. To do this, it was necessary, at the start and for some time thereafter, to deal largely in generalities. Now, however, when practically all employees know the importance of avoiding rough handling, the time is ripe to deal with specific cases. In addition to inspiring talks on the evils of rough handling, superintendents should now inform themselves regarding each individual occurrence and make a detailed investigation of it. Based on these investigations, the next meeting on the subject can deal with concrete facts and teach the men what to avoid, in the light of the experience thus gained. The roads which have put this practice in effect are finding that they are attaining far better results than the mere repetition of generalities could ever accomplish.

Passenger Traffic Continues To Decline

ONE of the most impressive facts regarding the railroad business that can be stated at the present time is that total railway passenger traffic this year probably will be smaller than in any year since 1909. In the months of 1928 for which statistics are available it has been six per cent less than in the corresponding months of 1927. It is reasonable to expect that the decline shown throughout the year will be relatively as large. If this is the case the number of passengers carried one mile will be less than 31,800,000,000. This will be a decline of about 15,600,000,000, or 33 per cent, since 1920. Nothing could better illustrate the revolution within recent years in the tastes and habits, and especially the traveling habits, of the American people than the way in which the railways have been affected by it. Prior to 1920 there was an increase in their passenger business almost every year. The increase in the ten years from 1910 to 1920 was almost 50 per cent. If the increase since 1920 had been as great in proportion as it was in the preceding ten years their present passenger business would be almost double what it is, and at present rates their annual earnings from it would be about $800,000,000 annually greater than they are. If they had at present only as much passenger business as they had in 1920 their annual earnings from it would be about $400,000,000 greater than they are. When the reasons why the railways cannot stand reductions of their present freight rates, but actually need higher rates are being considered, the enormous loss of passenger business they have suffered must not be overlooked. They have facilities and under pressure of public sentiment and competition are rendering a train service sufficient to handle as much passenger business as they did in 1920, but they have 33 per cent less of that kind of business. Obviously they must get sufficient earnings from their freight, mail and express traffic and their remaining passenger traffic to pay operating expenses, taxes and a return upon investment if they are to continue in business; and nobody has yet proposed that railway service shall be allowed to deteriorate, much less be abandoned.

Cost Accounting and the Railroads

IN the customary place in this issue we publish a communication from a railroad accounting officer expressing his views on the subject of railroad cost accounting. This subject is an important one—not only to the accounting officer, but also to almost every other man in the railroad business. Railroading is inseparable from the figures which reflect its progress. From the timebook of the extra gang timekeeper to the general balance sheet the figures are used to control operations and gage performance. Perhaps the system now in use is susceptible of improvement here and there, but the contention of some special interests that it needs wholesale change, placing it on an entirely different basis, is another matter. We have heard of successful cost accounting systems in other industries. Could essentially the same systems be applied to the totally different problems of railroading with equally favorable results? Moreover, can it not be reasonably contended that the railroads already have an accounting system which answers their cost questions insofar as cost is important? After all, it must be remembered that the railroad officer cannot, like a job-lot manufacturer, bid on each unit of prospective business. He must transport at pre-determined rates what is offered to him, be it coal or silk, as efficiently as he can, and hope that all the commodities which he moves taken together will pay him well enough to meet expenses and leave something for the owners.

Locomotive Efficiencies

DURING the past two or three years the possibilities of high boiler pressures have been attracting much attention among railroad officers and locomotive designers. The theoretical possibilities for improving cylinder efficiency by increasing the range of pressure through which the steam may be expanded are very attractive, and the greatest theoretical possibilities for the improvement of the over-all thermal efficiency of the locomotive lie in improving cylinder efficiency.

The limits of the theoretical cylinder efficiency obtainable in a reciprocating steam locomotive exhausting to atmosphere were clearly set forth by Lawford H. Fry in his paper before the 1927 spring meeting of the American Society of Mechanical Engineers. Starting with 220 lb. admission pressure and carrying the expansion down to a release and exhaust pressure of 25 lb., he demonstrated the theoretical thermal efficiency of the cylinder cycle to be 15.1 per cent. Similarly, for 350 lb., the cylinder efficiency is 17.5 per cent; for 450 lb., 18.9 per cent; for 600 lb., 20.3 per cent, and for 800 lb., 21.6 per cent. In each case, however, including the relatively low pressure of 220 lb., the attainment of these maximum theoretical efficiencies requires expansion ratios beyond those customarily obtained in the regular operation of single-expansion cylinders, and the possibilities for improving the cylinder efficiency by higher steam pressures without materially increasing the number of expansions beyond those customarily obtained in simple cylinders are so small that they scarcely justify the development of high pressures. It has become clearly evident, therefore, that some form of compounding is essential to the effective utilization of pressures much higher than those with which experience is already becoming quite general.

In considering the practicable possibilities of an advance beyond present practice, there is always a question as to how much of the gain in efficiency which is theoretically possible is actually likely to be attained in the practical utilization of the higher pressures. So far, available evidence on this question under American conditions is limited to that developed in laboratory tests of Baldwin locomotive No. 60,000, operating with a boiler pressure of 350 lb. and using the steam in one high-pressure and two low-pressure cylinders. A comparison of the results of the tests of this locomotive, of a 2-8-2 type carrying 205 lb. boiler pressure, and of a 2-10-0 type carrying 250 lb. boiler pressure, throws some light on the practicable improvement in cylinder efficiency likely to be attained. Working at a light cut-off and at 15 miles an hour, Baldwin locomotive No. 60,000 developed a cylinder efficiency of approximately 13.5 per cent at about one-third of its horsepower capacity. At something over one-half capacity and at 22.5 miles an hour, the cylinder efficiency was just under 14 per cent. In tests at relatively long cut-offs and speeds of 30 and more miles an hour, when the locomotive developed over 4,000 indicated horsepower, the cylinder efficiency had dropped below 13 per cent.

Under approximately similar conditions of working as to speed and output, the Mikado type locomotive with 205 lb. boiler pressure developed a cylinder efficiency of slightly over 11 per cent at the low and medium rates of working, dropping under 10 per cent as it reached its capacity. The Decapod, carrying 250 lb. pressure, developed cylinder efficiencies ranging from 12.5 to slightly less than 11 per cent.

The attainment of over 78 per cent of the theoretically possible cylinder efficiency for the expansion ratios employed, as was done by the Baldwin locomotive in certain tests, represents a very fair attainment. A locomotive, however, must be judged by its over-all efficiency, and it is the purpose of this discussion to point out the fact that variations in boiler and machinery efficiencies customarily met with in what are considered well-designed locomotives, may have as much effect on the over-all efficiency of the locomotive as may be expected from any high boiler pressures yet tried out in America. The Mikado type locomotive, to which reference has already been made, under the most favorable conditions developed over-all efficiencies exceeding eight per cent—efficiencies attained by neither of the other two locomotives considered. Furthermore, these high efficiencies were attained without the use of a feedwater heater, with which both of the other locomotives are equipped, purely as the result of exceptionally high boiler efficiencies and exceptionally high machine efficiencies.

As the boiler pressure is increased, the temperature of the water and steam in the boiler also increases and some increase in front-end gas temperature may result. Assuming that the latter increase is equal to that of the steam temperature, however, the difference is 48 deg. F. for an increase in steam pressure from 200 to 350 lb. This would scarcely effect a reduction in boiler efficiency of more than 1½ per cent, which is too small to account for the differences in boiler efficiencies in the locomotives here compared. At a rate of firing of approximately 30 lb. of coal per square foot of grate per hour, the efficiency of the 200-lb. boiler was 84.8 per cent; of the 250-lb. boiler, 74 per cent, and of the 350-lb. boiler, 68 per cent.

In making these comparisons there is no intention to disguise the fact that the use of higher steam pressures offers possibilities for improving locomotive efficiency, or to detract from the credit due the Baldwin locomotive No. 60,000 for its contribution to this development. The facts indicate, however, the great practicable possibilities for improvement in every-day loco-

motive efficiency by careful design which are too often placed in the background by the attention given to the more spectacular, but not fully developed possibilities of high boiler pressures. Indeed, future success of higher pressures themselves will depend on the extent to which their effect can be measured at the drawbar.

Railroads or All-Around Transportation Companies?

EVERYONE recognizes that we are now in a period of transition as regards transportation. The relative volume of various classes of rail tonnage is changing and business is not growing as rapidly as it once did. Much traffic, both freight and passenger, which formerly moved by rail has been shifted to the highway. There seems to be an extraordinary impetus toward inland waterway development and the airway looms up as possibly an important common carrier of the not-far-distant future.

Just what the ultimate outcome—the final basis of division of transportation among the various agencies—will be cannot be definitely predicted. It can be safely assumed, however, that the total volume of demand by the public for transportation will continue to grow. Thus it would seem that a corporation, not hampered by legislation as to the *means* of transportation it could employ, might offer rail service, waterway, highway or air transportation. Not restricting itself to one means alone, any shift in public favor from one method to another would not affect its gross revenues.

The railroads are and will undoubtedly continue to be the country's chief reliance, for freight transportation at any rate. At the same time, other agencies, operated independently, can by taking away the cream of the traffic here and there seriously affect the most reliable, all-weather, all-commodity agency that exists, to wit, the railroad. If this competition should come to the point where declining traffic brought railroad stagnation, not only the investors but employees, shippers and the public generally would suffer. And the whole financial structure of the country, of which railroad securities as savings bank and insurance company investments are so important a part, might find it difficult to withstand a serious depreciation in railroad earnings. One of the accepted methods of railroad strategy, where traffic tends to run heavily to one commodity which is subject to violent fluctuations, is to build up a more diversified traffic. In this way we have seen granger roads attempt to build up their areas industrially; coal roads endeavor to increase their tonnage of merchandise, etc. Would not a greater diversification in the *means* employed in providing transportation tend likewise to give railroads greater assurance of uniform prosperity, regardless of how business might fluctuate between the various agencies of transportation? Is not such added assurance important to the railroads, their officers and employees, to the public they serve and to the entire population whose interests are allied with those of the railroads in some manner, whether by direct ownership of securities or indirectly because they hold life insurance or have deposits in the banks?

That railroad companies have not diversified their methods of transportation to a greater degree is largely the result of hampering legislation. At one time large operators of coastwise and lake steamers, they were all but entirely forced out of the business by specific legislation. Their right to engage in other forms of transportation also is not as clearly defined as it ought to be. To give such diversification real impetus the law should not only not forbid; it ought actively to encourage railroad adoption and co-ordination with it of waterway, highway and air transportation. An immediate step in this direction would be the early adoption by Congress of the proposed act to regulate interstate highway passenger transportation, with a clause specifically authorizing the railroads to engage in this business. Further legislation might be deferred for greater study, but the ultimate solution can only come when all common carriers are subject to the same degree of regulation and when one company is specifically encouraged to offer all methods of transportation to its patrons. Not until then will uneconomic competition between the various agencies cease. Hamstringing the railroads while allowing an unregulated piracy to make off with their effects is not only ethically unjustifiable; it also constitutes a grave danger to the well-being of the general public.

Regulation of Rates

THERE are constantly occurring developments that make the student of railway affairs wonder if the government of the United States has any definite policy of regulation of railway rates. The Act to Regulate Commerce prescribes a definite policy, which is that rates shall be made just and reasonable and such that, in the aggregate, they will enable the railways, under good management, to earn a fair annual return. The Interstate Commerce Commission is charged with the duty of carrying out this policy. In addition, however, the commission is directed by the Hoch-Smith resolution, in regulating rates, to take into consideration the conditions prevailing in the various industries, and especially, in view of an alleged depression in agriculture, to make the lowest lawful rates on farm products.

The commission recently has rendered decisions in several cases which have raised questions regarding the application of every recognized economic principle of rate-making, and also every pertinent provision of law. Anybody who reads the opinions in these various cases will find it extremely difficult to decide how much weight the commission is giving to different principles and legal provisions.

The Mail Pay Case

The railway mail pay case was completely differentiated from various cases recently decided involving the adjustment of freight rates. The government of the United States being the only railway patron concerned, there could not be raised any question as to its ability to pay, or as to competition excepting as between the parcel post and the express business. There were technical issues between the post office department and the railways regarding the amount of space on passenger trains that should be charged against the department, but the basis of investment or valuation on which the railways should be allowed to earn a return, and the percentage of return they should be allowed to earn on it, were the only fundamental questions of principle involved. The railways, in presenting their case, assumed that they were entitled to rates that would yield a return of 5.75 per cent on their book investment, or on a valuation approximating it. Careful reading of the commission's opinion indicates that it acquiesced in this view as a matter of principle, although there is room for differences of opinion as to whether the advance in rates granted is sufficient to make the mail service rendered by the railways actually produce 5.75 per cent upon the value of the property devoted to it.

Passengers, express and mail are all carried on passenger trains. In his dissenting opinion Commissioner Eastman, by implication, criticized the railways for insisting upon rates that would yield 5.75 per cent on their investment devoted to the mail service while "they are not insistent, however, upon the same result in the case of the other two services, but rely upon the freight service to make up any revenue deficiencies which they may sustain in carrying passengers and express." One answer the railways doubtless would make to this is that rates must, in a large measure, be based upon what the traffic will bear, and that, under existing conditions, they would disregard this principle if they tried to advance the rates on passengers, but that mail easily can bear rates sufficient to yield a fair return and therefore should be made to do so. As to express, the earnings from it are plainly inadequate, but the railways hope to remedy this condition after they take over the express business.

Reductions of Freight Rates

It is generally recognized that some traffic cannot bear rates high enough to cover all transportation costs, including a fair return on investment, but that some traffic can bear rates more than sufficient to cover all such costs, and that rates upon all the kinds of traffic handled should be adjusted accordingly, with the result of enabling the railways to derive a fair return from the entire business handled by them. It is easily demonstrable that, from their entire business, neither the railways as a whole, nor any large territorial group of them, are earning a fair return, even as measured by the standard adopted by the commission itself. Consequently, every rate case before the commission seems necessarily to involve not only the question of whether the rates under consideration should be readjusted to make them reasonable as compared with each other, but also the question of whether they should be readjusted with a view to aiding in giving effect to the requirement of law that the railways shall be allowed to earn a fair return. But in most of the commission's decisions the principle of a fair return seems to be ignored. Although the railways are not earning a fair return, almost every readjustment ordered by it is a downward one. It has recently ordered reductions on livestock in eastern territory, on grapes from western New York and Pennsylvania, and on citrus fruits from Florida. It had previously ordered reductions on deciduous fruits from California and on coal from Ohio, Pennsylvania, Indiana and Illinois mines.

In accordance with what economic principle or provision of law are these reductions ordered? Sometimes the Hoch-Smith resolution is invoked as a reason for them. But what does the commission accept as evidence that an industry is entitled, under the Hoch-Smith resolution, to a reduction of rates? The average wholesale price of farm products is now about 52 per cent higher than in 1913, while the average wholesale price of metals and metal products is only about 25 per cent higher. The commission is granting reductions on farm products because of the alleged condition in agriculture, but two of its examiners, in a recent proposed report, while approving of a revision of rates on iron and steel articles in eastern territory, have recommended against changes which would reduce the earnings of the railways for handling these commodities. One reason given is that "no depression such as is quite generally urged on behalf of agricultural and livestock interests is apparent in the steel industry."

The plain implication is that, although prices in the iron and steel industry have advanced only one-half as much in proportion since before the war as prices of farm products, the freight rates of the iron and steel industry should not be reduced because it is comparatively prosperous, while the rates of the agricultural industry should be reduced because, as is claimed, it is in a condition of depression. It has heretofore been urged on behalf of the farmers that rates should be based on what the traffic will bear, and that the low prices of their products make them unable to bear the present rates. Now that the prices of farm products have advanced, it is to be held that prices are not at all a measure of what the traffic can bear, but that the profits being made in an industry are the true measure of the rates it should pay?

What Should the Railways Do?

Although the advance in rates granted in the mail pay case was much smaller than was asked, it is encouraging as an apparent indication of a disposition on the part of the commission to recognize in a practical way the right of the railways to a fair return in cases in which it is clearly demonstrated that traffic which can bear an advance is not contributing its share of the earnings required to enable the railways to make such a return. Possibly this decision, and even the remarks made by Commissioner Eastman in his dissenting opinion, contain an intimation to the railways as to the policy they should follow in future. Perhaps the commission believes that they have not been sufficiently zealous in scrutinizing and comparing their rates and operating costs for the purpose of bringing to its attention rates upon particular commodities or in particular territories which are not relatively high enough. Perhaps the commission is disposed to let them earn a fair return, but feels that it must reduce some rates and would welcome more proposed advances of others.

Clearly the railways should constantly be striving to get a fair return. They cannot get it if their rates are constantly to be readjusted downward either by their voluntary action or by orders of the commission, or by both. The carriers should not act upon the assumption that the commission is unwilling to let them earn a fair return when the commission is expressly required by law to do so. They should not act themselves, nor acquiesce in the commission acting, upon the assumption that their traffic as a whole cannot bear schedules of rates sufficient to enable them to earn a fair return. The only alternative to this is for them persistently to seek advances in rates not only to offset the reductions being made, but with the object of increasing their net return until it shall become "fair," economically and legally. No doubt if the railways should systematically and persistently follow this policy they would antagonize many shippers and arouse some public hostility. But they must either take that risk or the risk of continuing to fail to earn a fair return and of even earning a smaller average return than they are now. A favorable public sentiment which was secured and retained at the cost of permanent failure of the railroad industry to earn reasonable returns would be bought at too dear a price. It cannot be assumed that the continued ownership and operation of the railways by private capital is desired unless it can also be assumed that the total traffic handled by them can bear rates sufficient in the aggregate to enable them to make total earnings that will cover their operating expenses, taxes and a fair return upon investment. Therefore, as long as they are left in private ownership and management it will be the duty of their managers to use every legitimate means to try to get earnings that will yield a fair return, and fear of antagonizing regulating authorities, shippers, or the public should not deter them from performing that duty.

A Typical Orchard Scene in the Yakima Valley

Handling Fruit Across the Continent

Northern Pacific more than doubles perishable movement by careful attention to refrigeration

BY a concerted effort to improve its service of protection, the Northern Pacific has increased its perishable traffic from the Yakima Valley district in Washington, from 6,854 cars in 1921 to 15,147 cars in 1927. The output is, of course, controlled to some extent by climatic conditions, but, in general, the trend has been steadily upward. While the exact figures as to the relative loss and damage claims on this traffic are not available in separate form, a check of the railway's general loss and damage figures indicates that the claims have been much reduced. This is due to the efficient protective service, taken in conjunction with the system of checking carefully the movement of each car of perishables from the point of origin to destination.

Reduction in Claims Despite Long Haul

This reduction in claims has been accomplished despite the fact that, although some of the fruit is destined to the cities in the Pacific Northwest, the bulk of the movement is eastbound, involving a haul of 1,651 miles from Pasco, or 1,777 miles from Ellensburg to St. Paul. In this distance two mountain ranges must be crossed, with resulting abrupt changes in climatic conditions at all seasons of the year. To add to the difficulties of handling, the cars are invariably reconsigned en route, in exceptional cases as many as five or six times.

The Yakima fruit-raising district includes roughly the territory on the main line of the Northern Pacific between Pasco, Wash., on the east and Ellensburg on the west. In addition, five branch lines have been built to serve the growing business. While much of the movement consists of apples, a large proportion is so-called "soft fruit", prunes, pears, peaches, apricots, etc. The principal soft fruit movement takes place between August 1 and September 10. It is followed between September 10 and September 20 by the movement of early apples, while the heavy fall movement of apples begins about September 20 and continues until Christmas. After a temporary lull, the movement of apples and pears for storage begins about January 10 and continues until the end of May. Many cars of vegetables, principally potatoes, are also handled during the season. This latter movement is increasing rapidly, having reached approximately 8,000 cars last year.

The Icing Facilities

To meet the varying conditions, the Northern Pacific has built up an efficient chain of icing plants, in charge of competent inspectors, at many points along the line. A list of these stations is given in the accompanying table. This gives the Northern Pacific complete protective service from the producing territories to St. Paul and Duluth. There is an icing station about every hundred miles, the longest distance between stations being about 120 miles. This table shows the number of inspectors employed at each point. It also shows the stations where refrigeration is handled by agent's or

Icing Stations on the Northern Pacific

Natural Ice

Station	Capacity	No. Inspectors Employed
Duluth, Minn.	4,694 tons	1
Brainerd, Minn.	2,005	1
St. Paul, Minn.	6,255	3
Minneapolis, Minn.	3,253	1
Northtown, Minn.	9,929	1
Staples, Minn.	8,190	2
East Grand Forks, Minn.	2,000	yard
Dilworth, Minn.	10,430	3
Fargo, N. D.	5,256	1
Jamestown, N. D.	3,401	2
Mandan, N. D.	7,109	2
Dickinson, N. D.	2,597	yard
Glendive, Mont.	11,382	2
Forsyth, Mont.	820	yard
Billings, Mont.	7,273	1
Laurel, Mont.	8,582	3
Livingston, Mont.	3,192	yard
Butte, Mont.	2,557	yard
Helena, Mont.	7,996	2
Missoula, Mont.	8,184	2
Lewiston, Ida.	4,223	agent
Walla Walla, Wash.	3,938	agent
Ellensburg, Wash.	7,018	yard
Total Natural Ice Supply	130,284 tons	

Artificial Ice

Station	No. Inspectors Employed	Minimum Supply	Maximum Supply
Spokane, Wash.	3	11,000	17,500
Pasco, Wash.	3	15,000	30,000
Zillah, Wash.	agent	7,500	10,000
Auburn, Wash.	yard	6,000	10,000
Yakima, Wash.	3	17,000	20,000
Total		56,500	87,500

yardmaster's forces. The inspectors form a specially and intensively trained group, reporting to a chief inspector in the office of the general superintendent of transportation. Particular attention is given to the men in the agency and yard staffs handling icing in the smaller stations. They have all been educated thoroughly as to their duties and responsibilities by the various inspectors. In addition, instruction booklets are issued periodically to cover protective service in general and its various phases. That the force of inspectors is seasoned and experienced is indicated by the fact that the

Inspector.

VENTS A R R			AMT. ADDED		VENTS DEPT.		HEATER RECORD					FOR-WARDED
R	R	Vacant Space Ins	Supplied		R	R	Burning Yes or No	Closed or Filled Yes or No	Drains Open or Closed	Time Service Performed	Temperature	Train
L	L		Icing	Salt L. s	L	L						Time

The Field Book Gives a Complete Record

youngest of them has 14 years' service with the Northern Pacific.

The Car Supply

While the entire movement extends over a period of nearly nine months, the heaviest traffic moves between September 20 and December 20. From five hundred to six hundred cars are handled daily during the rush. To meet the situation, the Northern Pacific maintains 4,880 refrigerator cars in good condition. Normally this is sufficient to handle the business except during the rush period, when it is necessary to call upon outside assistance. As it happens, this is the slack season for the banana movement in which the Illinois Central and Northern Refrigerator Transit Company cars are used, so that cars are obtained from these companies. This arrangement is reciprocal to a certain extent, since the heavy banana movement takes place during the Northern Pacific's slack period, and it then interchanges cars with the roads handling that traffic.

The movement of all N. P. refrigerator cars is watched carefully when they are off the line, and connections are traced for the return of the empties immediately if any delays occur. Upon the return of the empties, they are dispatched to the concentration points at Spokane, Wash., and Pasco, the latter being the concentration point so far as the Yakima Valley district is concerned. The relatively small number of cars which are returned from the west are concentrated at Ellensburg, Wash., when empty and help to supply the west end of the district.

Some weeks before the shipping season begins, empty refrigerator cars are gathered in the producing territories, sufficient to meet the needs of the first two or three weeks' business. As the season progresses, empties are brought back from St. Paul and intermediate points as fill-outs in westbound trains. The car requirements are studied carefully, however, and whenever necessary, solid trains are operated from St. Paul to the Yakima valley, so as to avoid any possibility of car shortage.

Operation in the Yakima District

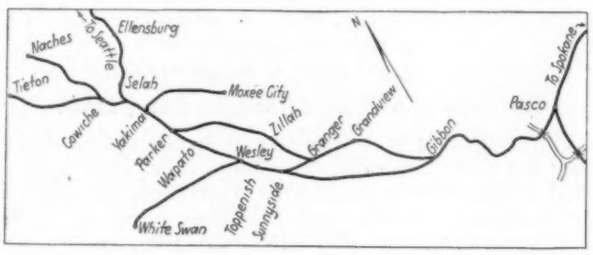
The agents at the loading stations telegraph to Pasco or Ellensburg for the number of cars required, specifying the class of protective service desired. This varies widely with the seasons and the particular kind of fruit to be loaded. For example, at the beginning of the season some of the early apples are moved under ventilation only, without icing, if their destination is within 400 miles of the producing territory. The same is true of pears and other soft fruit shipped green. As the season advances and the fruit begins to move to eastern destinations, full refrigeration is necessary.

When the agents' reports as to their requirements are received at Pasco and Ellensburg, the cars are prepared accordingly, arranged in station order, so as to avoid road switching, and dispatched to the loading stations. Trains leave both Ellensburg and Pasco over the main line, delivering empties and picking up loads en route. The junction points with the branches are also served on these runs, empties for stations on the branches being set out and loads from the branches picked up. Stub trains, run as extras out of Yakima, serve the Naches, Tieton and Moxee City branches, while the White Swan branch is served by an extra train from either Yakima or Pasco, depending upon whether the business offered is to move preponderantly eastbound or westbound. The Granger branch, which roughly parallels the main line from Parker, Wash., to Gibbon, is served similarly by a train running from Yakima to Pasco.

Thorough Inspection of Cars

The cars for perishable loading receive a thorough inspection at the initial icing plants immediately before they are dispatched to the loading stations. The bunkers or tanks, drip pans, drain pipes and drain traps are thoroughly cleaned and any obstructions removed. The hatch plugs are made to fit tightly and if the car is equipped with drain traps or valves for retaining brine, these are put in working order. The padding on the hatch plugs and doors is renewed if necessary. The hatch covers are provided with hasps and staples for sealing and the rods and sockets on the doors and door frames are repaired. Any temporary boards or paper on the bulkheads or elsewhere are removed.

Inspectors are stationed at the larger loading stations. The agents in the shipping territory have all been edu-



Northern Pacific Lines in the Yakima Valley

cated as to the protective requirements. The shippers, by means of educational campaigns, have been acquainted with the importance of the proper preparation of their shipments to permit safe transportation, with due regard to the nature of the lading and climatic conditions.

After loading, the cars are collected at Pasco, if moving eastward, or at Ellensburg, if moving westward. Upon arrival at Ellensburg, if sufficient tonnage is available, the cars are dispatched westward as an extra train, after protective service has been applied. If the tonnage is not sufficient to justify running a train, the cars are picked up by the frequent manifest freights.

The bulk of the movement is eastward, however, so that the largest concentration of loads takes place at Pasco. Owing to the fact that by far the majority of the fruit is sold rolling, no attempt is made to classify the cars in the yard there. Through trains are made

up at Pasco for Staples, Minn., where the N. P. has large yards, and where the line to Duluth leaves the main line.

A relatively small amount of fruit originates between Pasco and Spokane. Cars of perishables also arrive at Spokane from the Palouse branch, from the Central Washington branch and from the Hood River district on the Spokane, Portland & Seattle. The trains from Pasco also pick up the cars originating between Pasco and Spokane. When business justifies, through trains are run from Spokane to Staples, but, in general, all the cars concentrated there are picked up by trains from Pasco. Some perishables originating in the Bitter Root valley are also added to these trains at Missoula, Mont.

The careful supervision of protective methods has been largely responsible for the growth of the business and the decreased claim payments. Of all these methods refrigeration is the most important, since a majority of the cars move under this method of protection. Cars intended for perishables originating in the Yakima Valley are pre-iced in accordance with a careful plan to insure their complete protection until their return to re-icing stations. The icing plant at Pasco takes care of cars to be loaded as far west as Toppenish on the main line and Grandview on the Granger branch. The plant at Zillah ices cars for points on the branch, east as far as Sunnyside on the main line, and west as far as Parker and Wapato. The plant at Yakima handles Yakima proper, and stations on the Tieton, Naches and Moxee City branches, while the station at Ellensburg ices cars for stations on the main line as far east as Selah.

For the purpose of maintaining a complete and accurate record of all conditions entering into the icing and re-icing of cars, the inspectors and others having charge of icing are provided with field books, which provide space for entering the exact condition of each car.

Northern Pacific Apple Train Leaving Pasco, Wash.

A sample page from one of these books is shown in the accompanying illustration. Entries are made each time a car is handled at an icing station throughout its journey. These detailed reports are forwarded to the office of the general superintendent of transportation, where the record of each car is maintained, from the time it left its original icing station until its arrival at destination or delivery to connecting line. At each station where re-icing is necessary, the remaining ice is tamped down carefully and the amount of re-icing necessary is entered in the space provided in the field book, each inspector being equipped with a measuring stick for this purpose. The movement of all trains containing cars of perishables is checked carefully and any delays to such cars must be reported immediately to the general superintendent of transportation. Special attention is paid to refrigerator cars in bad order and a complete record is rendered on all such cars.

The entire system of complete reports on the movement of each car of perishables, together with a detailed history of the protective service rendered, has been of great value to the claim department. In effect, the Northern Pacific can now be held responsible only for actual damage occurring on its own line. Moreover, the careful check on all cars automatically constitutes a check on the entire protective service as well and has tended to improve it and reduce damages.

The Icing Station at Pasco, Wash.

Nothing is left to chance in carrying out this protective service. A comprehensive instruction book is in the hands of all concerned, which describes in detail just what should be done under all ordinary circumstances and covers every conceivable emergency as well. Definite rules are given as to the action necessary under the various and sometimes violent changes in temperature which take place along the course of such a long haul. The inspectors at the various points are required to keep each other advised as to the climatic conditions the car will encounter on the next stage of its journey and this is done currently throughout the run.

The Heating Service

Owing to the severe cold in much of the territory traversed by the N. P., it is necessary to maintain a comprehensive heating service during the winter season. A supply of charcoal heaters is maintained at 51 points along the line so that sudden changes in the temperature may be dealt with practically as soon as they occur at any point. All of these heaters are numbered and a general circular is issued each year, giving the numbers of the heaters assigned to each of the 51 stations. In this manner a constant supply is assured at all of these points, since the heaters are returned to the station to which they are assigned as soon as they have served their purpose.

AN INJUNCTION preventing the city of Denver from collecting assessments against three railroads to cover the cost of constructing a storm sewer in North Denver, was upheld by District Judge Charles C. Sackman on August 1. The city had built the storm sewer along the Platte river and then levied an assessment of $14,050 against the Northwestern Terminal Railway Company, $8,816 against the Colorado & Southern, and $2,183 against the Chicago, Burlington & Quincy. The railway companies appealed to the court claiming that they were not given the opportunity to protest against the assessment before the work was done and therefore could not be assessed. Judge Henry J. Hershey granted them an injunction restraining the city from collecting and then when the case was reopened on August 1, Judge Sackman upheld the previous decision.

Revision of Iron and Steel Rates Proposed

WASHINGTON, D. C.

A COMPLETE revision of freight rates on iron and steel articles in official classification territory, on the basis of a mileage scale for general application and another on a slightly higher basis for application in New England,. is recommended by Examiners Howard C. Faul and C. M. Bardwell of the Interstate Commerce Commission in a 94-page proposed report made public on August 4 in Part 6 of the rate structure investigation undertaken by the commission pursuant to the Hoch-Smith resolution on March 12, 1925. Fifteen formal complaint cases, three investigation and suspension proceedings and one petition under section 13 of the interstate commerce act were consolidated with the general investigation. Over 90 per cent of the steel of the United States is produced within the territory covered.

According to the report the basic scale recommended represents an attempt to offer a more consistent and equitable rate structure than that now in effect (based largely on fifth class rates) and one "which will make only such reductions in the carriers' revenue as must result from the application of what from all the evidence seem to be maximum reasonable rates."

Referring to the Hoch-Smith resolution the report says that "no depression, such as is quite generally urged on behalf of agricultural and livestock interests, is apparent in the steel industry" and that "on the contrary, the industry, generally speaking, is in a prosperous condition and the commodities under consideration move freely." The task assigned the commission by the resolution, the examiners say, is to distribute the burden of the transportation charges equitably and in the accomplishment of this task "the principle of what the traffic can or will bear is a factor which must be given due weight." Figures are given showing the earnings on capitalization and on stock of some of the principal steel companies, ranging from 2.27 to 10.09 per cent on capitalization in 1926, and also those filed by the carriers showing that the roads of the eastern district earned on their property investment only 4.63 per cent in 1923, 4.37 per cent in 1924, 5.07 per cent in 1925, and 5.61 per cent in 1926.

It is stated that the carriers do not deny that the general level of rates on steel is relatively high if transportation characteristics alone are considered but that they admit that a substantial profit is derived from steel and that it is highly desirable traffic. Their position with reference to the reasonableness of the steel rates in general is described as being that "the carriers' profits as a whole do not afford them more than a reasonable return" and that "the steel rates are not too high when, in addition to transportation characteristics, consideration is given to the value of the service, or in other words, what the traffic will bear." Various proposals were made by the parties to the case as to the scales which should be adopted and the report says that the proposals of the carriers "would result generally in increasing the present rate level," while those of the shippers "for the most part contemplate reductions, and some of them would make heavy inroads into the carriers' revenues from the steel traffic."

"While the record does not warrant as great reductions as would result from the application of the scales proposed by the shippers," the report says, "it does indicate that many of the present rates are too high. A comparison of steel with other commodities moving at fifth class rates or lower, the large and constant volume in which it moves, its heavy loading, the almost total absence of risk in connection with its transportation, and its small volume per weight unit, all are persuasive that fifth class-rates are not a proper basis for this commodity.

"The carriers do not seriously argue that this traffic should produce more revenue than at present but do contend strenuously that no general reduction in the present rates is justified. They defend the admittedly high level of the steel rates on the ground that the traffic is moving freely under those rates and that, therefore, so long as the carriers are earning less than the statutory fair return, no reduction in the revenues from this source should be made."

Except as otherwise provided, maximum reasonable rates for the interstate transportation of iron and steel articles, in carloads, minimum weight 36,000 lb., between all points in official classification territory, are prescribed in a scale beginning with 6 cents per 100 lb. for 5 miles and under and ranging up to 56 cents for 1165 to 1200 miles. The New England scale begins with 6.5 cents and runs up to 45 cents for 665-700 miles, for which the corresponding rate in the other scale is 41 cents. In computing distances the shortest routes over which carload traffic can be moved without transfer of lading should be used. It is recommended that the basic scale apply also between New England and the remainder of the official classification territory.

As to intrastate rates, the report says that it is obvious that a general revision along the broad lines here contemplated can successfully accomplish its purpose only if the rate structures within the several states are at the same time subjected to such revision as may be necessary to bring them into full harmony with the interstate rates finally determined upon. To this end most complete co-operation between the state and federal commission is said to be essential.

The system of rates proposed is said to be based directly on distance "upon the theory that, within a territory where traffic and transportation conditions are sufficiently alike to warrant a uniform rate level, distance is the simplest and fairest measure of transportation service." If this system is adopted, the examiners say, it will supplant a number of less extensive rate structures, some of them resulting from the interplay of competitive forces through a long period of years in which distance has played a minor part. The report then considers what departures from a strict distance basis should be permitted and it is recommended that the use of differentials in general be disapproved; but in view of the peculiar conditions at Johnstown and Cumberland, no objection is interposed to the retention of the present differentials eastbound provided the same differentials are published on westbound traffic. Some provisions are also made for grouping. The general conclusion is expressed that "the record leaves no doubt as to the need and the desirability of a thorough revision of the rate structure here under investigation. Aside from question of reasonableness of the present rates there is disclosed an utter lack of consistency and orderly arrangement, accompanied by many instances of unlawful prejudice and preference which should be removed. The failure of the present rates to meet the requirements of the law in this respect was alleged or conceded generally by both shippers and carriers."

Pricing Supplies Saves Money on Southern Pacific

*More accurate inventories and less waste of material by changing materials from names to dollars**

By V. R. Taylor

Division Storekeeper, Southern Pacific, Sacramento, Cal.

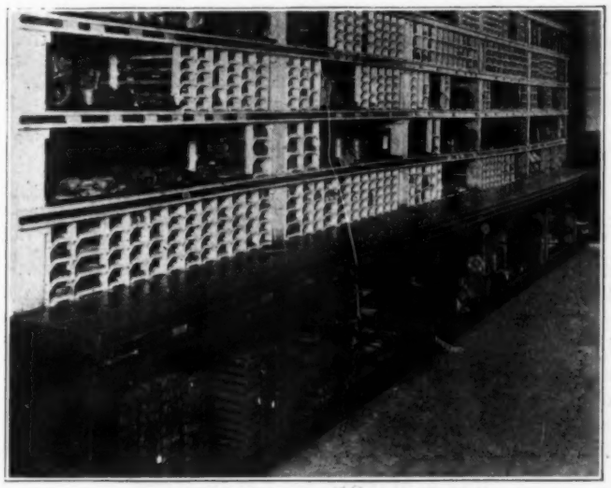
OVER three years ago the Southern Pacific Company put into effect on its Pacific system the method of pricing materials in store stock, known as "The Unit Pricing System." This system was installed in order to obtain the correct prices for all material and supplies received, whether by purchase or manufacture, and to charge the consumer with these instead of with estimated or the last available prices formerly obtained by the price book method. Under the "Unit Pricing System" the actual cost price of the article is used until that article has finally been applied.

True Cost on Every Article

Copies of all purchase orders received from the purchasing agent show the price, price unit and f. o. b. delivery points. If the freight bill is not available when the material is received, the freight is computed by an authorized freight rate clerk and the data passed to the price clerk who adds it to the purchase price. The total cost price of each article is then forwarded to the section storekeeper receiving the shipment, and at the same time the price clerk also shows the classification number of the material purchased, so that the section storekeeper or his helper can put the correct value and material classification number on one of the articles received, either by using a paper or metal tag or by stenciling. The material then carries this unit price and class until issued either on a shop or a transfer requisition.

Every Tire is Stenciled with its Actual Price

On store orders for articles manufactured in the shops the price is computed by the accounting department as soon as a store order is filled and the price and material classification number are then forwarded to the section storekeeper receiving the material, to be put on the material in the same manner as on a purchased article.



Store Room where the Material is Marked, not with the Average or Last Price, but with the Actual Price

When this material is shipped to other stores or local points, such as small roundhouses, car inspection and repair points, or any place where material is stocked or kept on hand until used, the price of each article and the material classification are shown in the column provided on the transfer requisition. This operation is performed by the store employee at the same time he is filling the order and packing it for shipment. It is then copied by the billing clerk on the invoice, copies of which serve as a shipping notice, and from these documents the section storekeeper or employee receiving the article places the price on the articles, if it has not already been done by the shipping store. It is not practical for the shipping store to mark the price on each article in stock but each separate lot or shipment is marked with its unit-price and the material classification number when received. When material is received in boxes the price and classification number are marked on each box and in the case of all large castings, forgings and large items of track material such as frogs, switch points and guard rails, each article is marked by the employees of the district or general store first receiving the article, so that when such material is received by an outside point it already bears its correct value and classification.

Store Employees More Careful

This placing of prices on all material in store stock has brought to the attention of store employees the value of the material which they are handling and

* From a paper entered in contest conducted by Division VI—A. R. A.

causes them, in many cases, to see, before filling requisitions for costly items, if a cheaper article will not answer the purpose as well or if the old article can not be repaired at a minimum cost. It also causes the section storekeepers to watch their orders more carefully so as to keep down their stock balances. With accurate knowledge of the value of the materials, they can readily compute the value of the materials being ordered.

On the supply train the unit pricing has brought about decreases in disbursements for when the attention of supervising officers is called to the value of some articles ordered for delivery, they often consult the maker of the requisition or the user of the material at the time delivery is to be made to see why the material or supplies are necessary.

Promotes Substitution

By knowing the cost of an article, shop employees have often been able to manufacture cheaper than to purchase, and here again the unit price system is an advantage for when the employees handling and using the material do not know the cost, it is not possible to make comparisons. The pricing has also called the shop foremen's attention to the value of the materials they are using and has caused them to repair many articles by welding, which they would have ordered from the store. Frequently mechanics or foremen advise that a cheaper article will serve the purpose equally as well as the article ordered, as a result of this knowledge of the cost of the article.

Value Marked on Large Items

All large items of track material, such as frogs, switches and guard rails, are tagged with a metal tag or else stenciled, showing their value. The roadmaster and section foremen thus have their attention drawn to the value of the material, and it causes them to watch more closely the amount of material they are using. In many cases they prolong the use of articles by making slight repairs while in the track, rather than to apply new articles. This is especially true if their operating allowance is low at that time.

Before starting the unit price system, materials and supplies were only names, but now they are so many dollars, and the effect has made all more careful in the spending of the company's money.

New Construction in Guyandot Valley Authorized

WASHINGTON, D. C.

THE Interstate Commerce Commission on August 2 made public its decision on the competitive applications filed by the Chesapeake & Ohio, Norfolk & Western, and Virginian, or their subsidiaries, for authority to extend their lines through the Guyandot valley in West Virginia for the purpose of serving the coal traffic of the Guyandot basin, which is estimated to contain about 330 square miles nearly all underlaid with coal.

As the result of a comprehensive investigation and hearings the commission has issued certificates authorizing the Virginian & Western, a subsidiary of the Virginian, to build a line from Itmann to Gilbert, W. Va., 40.6 miles, and authorizing the Guyandot & Tug River, a subsidiary of the Norfolk & Western, to build part of its proposed line from Gilbert to Wharncliffe, 10.5 miles, whereas it had asked authority to build from Elmore to Wharncliffe, 53 miles. The application of the Chesapeake & Ohio to build from Gilbert to Mullens, 47.3 miles, and from Stone Coal to Mullens, 8.2 miles is denied.

The certificates issued are on condition that construction shall be commenced by January 1, 1929, and completed by December 31, 1931.

The report shows that the upper Guyandot basin is now producing large quantities of westbound coal, which would find its natural outlet over a line down the Guyandot river to the Ohio a few miles above Huntington, W. Va., free from adverse grades, instead of over the heavy grades of the present routes. Between Itmann and Gilbert, about 41 miles, there is no railway along the Guyandot river and all of the proposed lines would cover this stretch. It was admitted by the applicants that only one line should be built between Elmore and Gilbert. The line which the C. & O. proposed to build was estimated to cost $10,104,000, without equipment, while the Norfolk & Western estimated the cost of its line from Wharncliffe to Itmann, 50.2 miles, at $9,344,000, of which $2,600,000 is for the line from Wharncliffe to Gilbert. The Virginian's line is estimated to cost $7,500,000. Some sort of priority was claimed by each of the applicants for its project.

"The Virginian needs its proposed line", the report says, "in order to have greater independence in the matter of an outlet for westbound coal. It appears that it can have no suitable outlet to the West except down Guyandot river, and that it is not desirable to put the ownership of the line through this narrow mountain valley or gorge under the control of one of its competitors.

Trackage rights for overhead business would diminish but not remove this objection. The grant of a certificate to the Virginian will insure supplying the necessary connection between the lines on the upper and lower Guyandot at the minimum cost of construction, and operation by the Virginian of the proposed line should tend to some economies in the cost of handling eastbound freight as compared with operation by the other applicants. Multiple operation of the line by the three applicants would not tend to economy or efficiency.

The people of the local territory prefer the Virginian for reasons that appear to be sound. So far as the question of priority intervenes, the Virginian's claim appears at least as good as any others.

"The construction of that part of the Norfolk & Western's proposed line from Wharncliffe to Gilbert would enable the N. & W. to compete with the C. & O. for westbound traffic from the Guyandot valley, and would insure operators in the territory competitive service to the west. The N. & W. might be disposed to permit the exploitation of the lands of the Pocahontas Company, provided it received the westbound tonnage therefrom at Wharncliffe."

Commissioner Porter, dissenting in part, said that in the public interest there should be a condition attached requiring the Virginian to accord to the Chesapeake & Ohio upon fair terms trackage rights for overhead traffic over the line from Gilbert to Stone Coal, and that he was unable to agree with the finding that public convenience and necessity requires the construction of the line from Wharncliffe to Gilbert.

Pennsylvania Improves Efficiency

Striking betterment in every phase of operation maintains net in face of declining gross

GROSS revenues of the Pennsylvania Railroad for the first six months of the current year totaled $309,166,552, being a decrease of $24,505,486 when compared with the first half of 1927. Operating expenses were held down sufficiently, however, to bring an actual increase in net railway operating income, which was $51,277,232 for the period, the increase over the first half of 1927 being $151,819.

In 1927 the Pennsylvania System had operating revenues of $721,280,031 (Table 1) and net railway operating income of $110,168,249. The revenue figure was 6 per cent lower than for 1926, but net railway operating income was only 2.6 per cent lower—and in 1926 net railway operating income was the highest in the system's history. From the standpoint of operating revenues 1923 still leads. In that year they reached a total of $775,254,218, from which 1927's figure represents a decline of 7 per cent. Net railway operating income was, however, 25 per cent greater in 1927 than it was in 1923.

The annual reports of the Pennsylvania Railroad give some statistics covering the railroad company proper (10,581 miles); others for the regional system (11,095 miles, including all transportation companies except the Long Island, the Baltimore, Chesapeake & Atlantic, the Baltimore & Eastern and the Baltimore & Virginia S. S. Co.); and still others are given covering the Pennsylvania System (11,689 miles, including all transportation companies). With figures given in this article it will be stated whether or not they apply to the railroad company, the regional system or the entire Pennsylvania System.

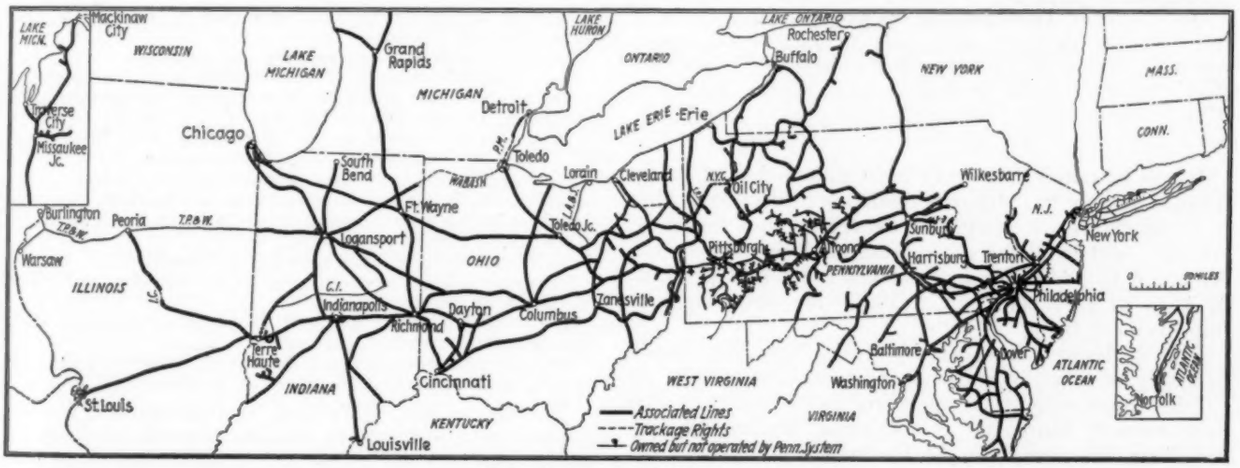
Revenue Ton-Mileage Highest in 1926

Revenue tons carried by the regional system in 1927 totaled 223,200,064 a decrease of 8.8 per cent from 1926 and a decrease of 9.6 per cent from the peak year of 1923. Revenue ton-mileage in 1927 declined 7.7 per cent from 1926, which year incidentally exceeded 1923 slightly in this respect. The average earnings per ton-mile showed a slight upturn—from 1.024 cents in 1926 to 1.030 cents in 1927, due to a relatively greater decline in tonnage of lower-rated commodities than in those paying the higher rates.

The natural, and correct, inference to be drawn from the preceding paragraphs is that the Pennsylvania in recent years, like many other railroads, has increased its net earnings not by handling a greater volume of business, but by moving a rather steady volume with growing economy and efficiency. Its problem has not been to extend facilities, but rather to overhaul and improve the operation of its existing plant. The last column in Table 1, showing net railway operating income since 1923, and the comparative operating statistics, shown in Table 2, reflect the system's success in meeting the challenge of the conditions which have obtained in recent years.

Comparative Statistics Show Operating Improvement

The actual transportation task of the railroads is reflected in gross ton-miles. The effective work they do is shown in net ton-miles. Table 2 shows that the Pennsylvania System (excluding the Long Island)



The Pennsylvania System

handled slightly more gross ton-miles in 1927 than in 1923, but that net ton-miles were 6.4 less. This slight increase, 1.4 per cent, in gross ton-miles with an increase of 5.4 per cent in freight car miles, the road handled in 1927 with a decrease, when compared with 1923, of 10.6 per cent in freight train-miles, 10 per cent in freight locomotive-miles and 25.2 per cent in freight train-hours. Gross tons per train increased 13.4 per cent, with an increase of 17.4 per cent in freight cars per train. Train speed was increased 20 per cent and gross ton-miles per train-hour 35.4 per cent. Coal used per 1000 gross ton-miles declined 15.8. This great increase in economy of operation explains how the Pennsylvania has been able to increase its earnings without doing a greater business, and with an actual decrease in its revenue per ton-mile.

One or two factors shown in Table 2 are unfavorable to the railroad. For instance, the average load per car declined 8.7 per cent in the five-year period. Likewise

the ratio of loaded to total car-miles declined slightly. These changes do not reflect a decline in railway efficiency, but rather better car service to shippers.

Locomotives Larger and Utilization Improved

The question arises as to how these improvements in operating efficiency were secured. It is difficult to assign definite reasons—yet the Pennsylvania has spent millions of dollars in improvements in recent years, and these expenditures have doubtless contributed importantly toward providing improved and more economical performance. For instance, to consider the matter of motive power: In 1923 the system had 5,065 steam freight locomotives with a combined tractive power of 265,580,469 lb. In 1927 it had reduced this number to 4,466 with combined tractive power of 248,806,494. The average tractive power per steam freight locomotive in service increased from 52,434 lb. in 1923 to 55,711 in 1927, or 6.3 per cent. This increase undoubtedly helped to bring about the heavier train loading and possibly had its effect on speed also. At the same time, by retiring the older and less efficient power and utilizing newer and more modern designs, it was possible to reduce the number of units to be maintained by 11.8 per cent. This must have aided in the steady reduction of the ratio of maintenance of equipment expense to total operating revenues from 26 per cent in 1923 to 21.1 per cent in 1927. Operating ratios and important component items follow:

Pennsylvania Regional System—Percentages of Expenses To Operating Revenues

Year	Maintenance of Way	Maintenance of Equipment	Transportation	Operating Ratio
1923	12.0	26.0	39.2	82.0
1924	11.6	24.4	39.0	80.3
1925	12.8	23.9	36.7	78.5
1926	13.1	22.6	36.8	77.6
1927	13.3	21.1	37.1	77.0

It will be noted that every ratio except that of maintenance of way has shown a tendency to decline. That in maintenance of equipment expense stands out most strongly, and is all the more remarkable in view of the reduction in bad-order locomotives from 19.8 per cent in 1923 to 12.4 per cent in 1927—the percentage of improvement being 37.4.

The declining transportation ratio, however, would probably be taken by most as the surest measure of all of the improvement in operating performance. This improvement, moreover, is continuing during the present year, the figure for the Pennsylvania Railroad being 35.5 for June just passed, having declined steadily from 42 in January.

The Pennsylvania during the past five years has spent an average of 39 million dollars a year for capital improvements to its own and leased lines. Of this total the following percentages have been on roadway: In 1923, 25 per cent; 1924, 19 per cent; 1925 and 1926, each 30 per cent; 1927, 48 per cent. The change in locomotive conditions due to the acquisition of new power has already been outlined. From 1923 to 1927 freight car capacity of the system increased from 13,598,225 tons to 14,579,945.

Capital Expenditures on Roadway

Capital expenditures on roadway and structures have naturally been diverse and no complete list can be given of them. However, the following fragmentary tabulation of projects undertaken in recent years will give some idea of the improvements which have been made to promote efficiency of operation:

Modern car repair facilities provided at Enola, Pa., Pitcairn, Pa., and Chicago.

New line built from Derry, Pa., to Donohoe.

Low grade line constructed from Kenwood, Pa., to Rochester.

Engine terminal facilities improved at Sharpsburg, Pa., Columbus, O., and Mingo Jct., O.

Yard facilities added to at Sharpsburg, Pa., Mingo Jct., O., Girard, O., Sandusky, O., and Greenville, N. J.

Low grade line built from Bayard, O., to Canton.

Little Creek extension undertaken at Norfolk, Va., terminal, reducing floating from 36 to 24 miles and eliminating delays from harbor congestion.

Additional shop facilities provided in Illinois.

Second track construction and grade revision undertaken in Illinois on St. Louis line.

Western Allegheny Railroad acquired to expedite traffic through the Pittsburgh gateway.

Bridges reconstructed and improved at many points, including that over the Ohio river at Steubenville.

The list, as has been stated, is fragmentary, but it is typical and the observer can see that all of these improvements are of a nature to affect operating performance favorably.

Table II—Comparison of Selected Freight Operating Statistics—Pennsylvania System*
EXCLUSIVE OF LONG ISLAND R. R.

	1927	1923	Per cent of change Inc.	Per cent of change Dec.
Mileage operated	10,848	10,894		0.4
Gross ton-miles (thousands)	107,734,375	106,299,624	1.4	
Net ton-miles (thousands)	49,793,893	53,346,358		6.4
Freight train-miles (thousands)	53,557	59,894		10.6
Freight locomotive-miles (thousands)	63,844	70,938		10.0
Freight car-miles (thousands)	2,589,482	2,456,890	5.4	
Freight train-hours	4,781,465	6,389,833		25.2
Tons of coal consumed by freight locos.	7,857,857	9,244,216		15.0
Car-miles per day	23.9	23.4	2.0	
Net tons per loaded car	30.5	33.4		8.7
Per cent loaded to total car-miles	63.1	65.0		2.9
Net ton-miles per car day	461	508		9.3
Freight cars per train	49.3	42.0	17.4	
Gross tons per train	2,012	1,775	13.4	
Net tons per train	930	891	4.4	
Train speed, miles per train-hour	11.2	9.4	20.0	
Gross ton-miles per train-hour	22,532	16,636	35.4	
Net ton-miles per train-hour	10,414	8,349	24.7	
Lb. coal per 1,000 gross ton-miles	128	152		15.8
Loco. miles per loco. day	53.3	57.2		6.8
Per cent freight locos. unserviceable	12.4	19.8		37.4
Per cent freight cars unserviceable	5.6	5.4	4.0	

* From Reports of the Bureau of Railway Economics.

Expenditures to Improve Service and Build Traffic

Some other capital expenditures which the road has made were intended primarily to improve service to the public and, in some cases, thereby to influence traffic.

Of these may be mentioned:

A new pier and grain elevator provided at Baltimore.

Extensive additions made to perishable terminal facilities, both rail and pier, at New York.

Table I—Pennsylvania Traffic and Earnings, 1923-27

	Pennsylvania Regional System*						Pennsylvania R. R. System†		
	Mileage Operated	Revenue Tons	Revenue Ton-Miles (thousands)	Average Haul, Miles	Average Receipts per Ton-Mile (cents)	Percentage Freight to Total Operating Revenues	Railway Operating Revenues	Railway Operating Expenses	Net Railway Operating Income
1923	11,087	246,905,248	48,622,873	196.9	1.045	69.0	$775,254,218	$633,944,606	$87,927,078
1924	11,082	215,467,806	41,755,039	193.8	1.067	67.6	698,713,249	560,069,354	84,010,909
1925	11,108	229,509,596	45,025,731	196.2	1.045	68.5	727,678,529	569,944,172	107,792,415
1926	11,117	244,704,115	49,116,691	200.7	1.024	69.5	766,989,363	594,547,708	113,151,122
1927	11,095	223,200,064	45,356,971	203.2	1.030	69.0	721,280,031	554,780,715	110,168,249

* Embraces all transportation companies, except Long Island Railroad and three small companies, and accounts for 94 per cent of system operating revenues. † All transportation companies.

A large express terminal provided at Sunnyside Yard, Long Island City.

Participation in the Chicago Union Station.

Passenger terminal at Philadelphia undergoing relocation and modernization.

Line from Philadelphia to Wilmington, Del., electrified.

Perishable terminal constructed at Philadelphia.

In addition to expenditures such as those cited above which improve service or effect operating economies, the Pennsylvania, like other railroads serving well settled regions, has to provide each year for additional grade crossing elimination projects.

Maintenance Standards

The Pennsylvania System in 1927, with virtually the same main line mileage as in 1923, had 203 more miles of second track and 427 more miles of yard tracks and sidings. Rail and tie renewals during the past five years have been as follows:

	Tons of New Steel Rail Placed in Track	Number of New Ties Placed in Track
1923	142,423	5,573,646
1924	157,925	4,684,902
1925	203,672	5,506,732
1926	217,995	5,381,042
1927	212,844	4,424,147

Standard rail for main line is of 130-lb. section and the road now has 5,200 track miles laid with this weight.

The distribution of traffic on the Pennsylvania Railroad is shown in Table 3, percentages of important commodities and classes to total tonnage being given for the past five years. The outstanding changes to be noted are the increasing importance of perishable traffic, road building materials and manufactures and the relative decline in coke, forest products and l. c. l.

Passenger Traffic Important

Passenger traffic is an important source of income to the Pennsylvania. In 1927 the regional system derived 26.9 per cent of its total operating revenues from its passenger train service. This service is maintained to a high standard and yet, like other roads, the Pennsylvania feels the effect of highway competition—although not to the same extent as some other carriers. In 1927 the system's total passenger-miles reached the total of 6,386,154,279—a decline of 2.7 per cent from 1926, and a decline of but 13 per cent from the 1920 peak.

Table III—Percentage of Certain Commodities and Classes to Total Revenue Tonnage—Pennsylvania Railroad

	1923	1924	1925	1926	1927
Other Fresh Fruit	0.42	0.53	0.48	0.55	0.59
Other Fresh Vegetables	0.43	0.45	0.46	0.42	0.49
Products of Agriculture	4.90	5.17	4.51	4.32	4.84
Products of Animals	1.01	1.15	1.02	0.95	1.02
Anthracite Coal	6.07	5.41	4.00	4.69	5.41
Bituminous Coal	38.23	37.36	39.33	40.64	38.68
Coke	4.81	3.50	3.13	3.23	2.27
Iron Ore	4.87	3.31	4.90	4.85	4.55
Clay, Gravel, Sand and Stone	7.61	9.25	8.91	8.47	8.98
Products of Mines	62.48	59.87	61.36	62.93	61.00
Products of Forests	4.49	4.86	4.14	3.85	4.01
Other Mfg. and Misc.	7.71	8.55	8.14	7.74	8.18
Manufacturers and Misc.	23.41	25.74	25.79	25.30	26.37
L. C. L.	3.71	3.21	3.18	2.65	2.76

In 1923 total revenue tonnage was 246,206,544; in 1924—214,636,127; in 1925—228,889,365; in 1926—244,052,427; in 1927—222,532,765.

It is difficult to forecast the future of passenger traffic, with the constant growth of highway competition and the threat of the airway. On the other hand, the Pennsylvania is itself laying plans to enter both these fields. Furthermore, with the kind of rail service it gives and its position as regards terminals, it seems reasonable to suppose that as long as passengers travel by rail the Pennylvania will have its share of the business.

The Pennsylvania pays dividends at the rate of 7 per cent. It enjoys the distinction of having paid dividends regularly since 1847. Net income after charges in 1927 was equivalent to 13.6 per cent on the stock. That these satisfactory earnings can be reported is, however, due to conservative capitalization rather than to great fortune in securing a high rate of return. On the property investment the net railway operating income of 1927 represented a return of only 4.58 per cent, as compared with 4.80 in 1926—the highest figure yet attained.

A Civic Institution

The Pennsylvania, aside from its transportation service, exercises an important civic function in the territory it serves. It owns or participates in the ownership of terminals in various large cities it serves which are important public institutions—the Chicago Union Station, the Washington Union Station, Pennsylvania Station at New York, the Philadelphian terminal improvement, the proposed Cincinnati Union Terminal and the proposed Newark terminal. In 1927 it spent approximately $200,000,000 for fuel, material and supplies and paid wages amounting to $367,000,000 and taxes of $39,500,000. The company's stock is owned by 142,622 holders. These holders should be increased by the recent permission of the Interstate Commerce Commission for a further issue of $17,500,000 to be sold to employees and officers at par.

Accidents in Year 1927 I. C. C. Bulletin No. 96

ACCIDENT bulletin No. 96, for the calendar year 1927, just issued by the Interstate Commerce Commission, shows the total of casualties on the railroads of the country for the year as 6,821 persons killed and 104,799 persons injured. These totals are smaller than those shown in the preliminary memorandum which was issued, subject to revision, last April, and which was summarized in the *Railway Age* of April 14, page 854. The total number of *persons* killed in "train service accidents" is 6,096 instead of 6,267; and the total number of *passengers* killed under this head is 69 instead of 78. The totals under the head of train accidents are not different from those in the preliminary report. The principal feature not noticed in the *Railway Age* of April 14, is the table showing the costs, etc., under the head of train accidents. These totals, with those of the two years last preceding, are shown below:

Collisions, Derailments, etc., 1925-26-27

	No.	Damage to railroad property	Killed	Injured
1927—Collisions	4,803	$4,750,236	80	1,557
Derailments	11,370	14,277,583	122	1,271
Other	2,803	1,738,079	84	244
Total	18,976	$20,765,898	286	3,072
1926—Collisions	5,572	$5,902,391	152	2,319
Derailments	12,606	14,557,654	141	1,362
Other	2,899	1,725,261	67	235
Total	21,077	$22,185,306	360	3,916
1925—Collisions	5,166	$5,502,468	124	1,762
Derailments	12,759	15,057,949	226	1,911
Other	2,860	1,589,040	68	239
Total	20,785	$22,149,457	418	3,912

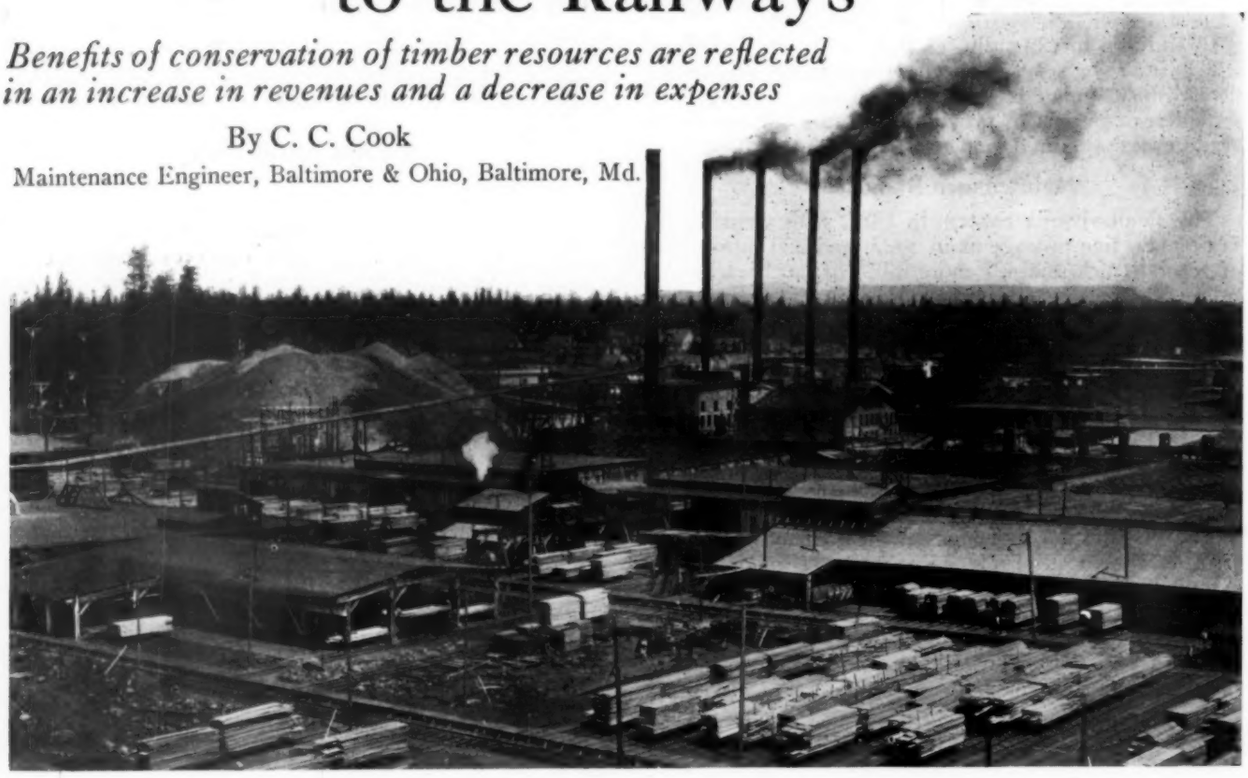
This bulletin, consisting of 112 large pages, contains the customary elaborate classifications and tables of details. Thirty-three pages are devoted to statistics tabulated under names of roads. Certain data concerning highway crossings, shown in previous bulletins, is omitted this year for the reason, it is stated, that the subject will be covered in the annual report of statistics of railways.

Wood Utilization is Important to the Railways*

Benefits of conservation of timber resources are reflected in an increase in revenues and a decrease in expenses

By C. C. Cook

Maintenance Engineer, Baltimore & Ohio, Baltimore, Md.



APPROXIMATELY 20 per cent of all the lumber produced in the country is taken by the railroads. A continuous supply is needed to meet the requirements of adequate maintenance of equipment, road and structures, and to provide for new and additional facilities with the ever-increasing growth of the nation's demands.

Kinds of Timber Used by Roads

When we look at the various kinds of timber constantly used by the separate departments of the roads, we find that these range from the fine grades of finishing lumber for passenger cars and buildings, on through other grades to heavy timbers used in the maintenance of equipment, roadway, bridges, buildings, water service and signaling.

These, of course, are duplicated in the construction of new facilities. In addition thereto, a large quantity of timber is used in manufactured articles such as tools, furniture, and many appliances in which manufactured timber is combined with other materials.

A survey of the annual needs of one road representing about 4 per cent of the Class I carriers, reveals the following approximate quantities of lumber purchased annually:

In Maintenance of Equipment.	
For siding, lining, roofing, sills, framing and flooring, mostly short leaf yellow pine	6,360,000 ft.b.m.
For running boards, sills, framing, flooring, largely long leaf yellow pine	6,830,000 ft.b.m.
Oak flooring and mixed stock	6,610,000 ft.b.m.
Passenger car stock, poplar, quartered oak, cypress, etc.	1,100,000 ft.b.m.
Total	20,900,000 ft.b.m.
In Maintenance of Roadway and Structures.	
For bridge ties, switch ties, bridge timbers, and building materials, oak	17,000,000 ft.b.m.
For bridge timbers and building lumber, yellow pine, fir and mixed woods	22,000,000 ft.b.m.
Total	39,000,000 ft.b.m.

Using these figures as a basis for estimating the consumption of all Class I roads, there would appear to be required annually:

For Equipment	500,000,000 ft.b.m.
For Roadway and Structures (Exclusive of cross ties.)	1,000,000,000 ft.b.m.

Statistics published by the Interstate Commerce Commission for the six years ending with 1926 show that 84,000,000 cross ties, or about 2,755,000,000 ft. b. m. are used annually.

The value of this timber is estimated to be:

Equipment	500,000,000 ft.b.m.	$30,000,000
Roadway and Structures	1,000,000,000 ft.b.m.	45,000,000
Cross Ties	2,755,000,000 ft.b.m.	111,400,000

(The item of cross ties includes the cost of treatment, which was applied to slightly more than 53 per cent of the ties used, and is the cost of ties ready for placement.)

Here is a not inconsiderable sum, approaching $200,000,000 per year when there is included the lumber forming parts of other manufactured articles. It amply warrants the interest and activity which railroads are taking in the measures leading to the most effective utilization of wood. A survey of accomplishments in this respect will show that the roads have led in many of these measures and have reaped enormously in reduced expenses in the construction and maintenance of their properties.

Savings by Preservative Treatment

It will be desirable to treat these measures in the order of their importance, as shown by the returns in savings that have accrued. Outstanding in this respect

* A paper presented at the third annual meeting of the National Committee on Wood Utilization at Washington, D. C., on May 5.

is the preservative treatment of timber. It is commonly known that this industry has reached the prominent position it now occupies as a result of the business which comes to it from the railroads. It probably is just as generally recognized, at least among the railroad men interested in the success of their properties, that there has been no one item of maintenance expense which has paid larger returns in the reduction of expenses, than wood preservation. During the last year of completed record, 1926, preservative plants reported the treatment of about three and a quarter billion feet of timber. Approximately three-fourths of this was treated for and by the railroads.

Cross Ties Represent 65 Per Cent Of All Timber Treated

Cross ties always have been the bulwark of the preservative industry and they continue to lead all other timbers combined, representing about 65 per cent of all timber treated during 1926. Notwithstanding the pre-eminent position that cross ties hold in this respect, it is shown in the record of cross ties used during 1926, that out of 80,745,000 ties used, 25,185,000 ties, or approximately 31 per cent, were used untreated. This indicates the opportunities yet remaining for many of the roads in this item alone.

Field for Timber Preservation Is Widening

The records, however, show that the roads are rapidly increasing the quantities of other structural timber which they are giving preservative treatment. It has been extended by the various roads to cover these timbers:

Bridge and trestle timbers
Piling
Piers, wharves, bulkheads and cribbing timber
Water tank supports and floor joists
Station and platform substructures and flooring
Timber floors of overhead highway, foot and signal bridges
Timber used in sills and foundation blocking of buildings
Timber wall plates for turntable circle walls, inspection pits, etc.
Snow fences
Cattle chutes
Stockpen posts
Drain boxes
Crossing planks
Signal trunking and capping
Fence posts
Telegraph poles
Sign post bases
Tie plugs
Car decking, and
Miscellaneous timbers, as furring for plank crossings, separating strips and sills in storage yards, etc.

These timbers, other than cross ties, represent approximately 40 per cent of the value of all of the timber used by the railroads; the treated timber of that character, however, is, roundly, only 20 per cent of the value of all treated timber used. This exhibits the possibilities and the opportunities yet awaiting those responsible for the economic maintenance and operation of these properties.

Statistics for 1926 show that 349,945 miles of tracks are operated by the Class I roads. The ratio of main track miles to siding miles is about 2.4 to 1; allowing for the displacement of cross ties by switches and bridges, each mile of track will average approximately 2,600 cross ties. The situation, where full economy resulting from the extension of life by treatment may be realized, exists on probably 90 per cent of the mileage. There are, then, in tracks, 924,170,000 ties, or approximately 30,000,000,000 ft. b. m. of timber now treated or susceptible of treatment for the purpose of economy, and it is estimated there are now in place on all Class I roads about 5,000,000,000 ft. b. m., of other structural timber which could be treated economically.

The values of these timbers in tracks and structures may be taken at these prices:

	Cross Ties	Other Timbers
Purchase, per M. ft. b.m.	$25.00	$45.00
Treatment, per M. ft. b.m.	12.50	20.00
Placing, per M. ft. b.m.	15.00	40.00

Applying these to the foregoing quantities, there will be found the following values for both cross ties and other timbers in place, first considered as untreated and then as treated timbers:

Untreated	$1,625,000,000
Treated	2,100,000,000

With untreated timber giving a life of eight years and treated timber a life of 20 years, we get the following annual costs, which include interest on the investment plus a sum which, placed in a sinking fund, will, at the expiration of life, equal the original cost:

Untreated	$261,670,000
Treated	183,050,000
Saving	$78,620,000 per yr.

Nearly 20 years ago an honored servant of this republic startled the nation with the statement that the railroads could effect a saving of $1,000,000 per day in their operations. I do not know if the economies that have just been cited were included in the items which served to make that total, but it is submitted that an appreciable percentage of it must well have depended upon the savings which the practice of wood preservation, even then, was returning to the roads and was offering in ever increasing amounts for the coming years.

That the roads have pursued this tangible and profitable utilization project to their own material gain, and with extraordinary benefit to the nation through the conservation of its declining timber supply, is evidenced by the fact that, as near as data in hand will show it, somewhat in excess of 60 per cent of the cross ties now in tracks are treated.

Convincing evidence of their purpose is shown by the rate of increase in number of treated ties. It is now greater than it ever has been, as witness these figures for renewals in tracks previously constructed on Class I railways.

Records per Mile of Track

Year	All Ties	Treated	Per Cent Treated	Rate of Increase
1921	228	95	41.7	..
1922	227	106	46.9	5.2
1923	219	108	49.3	2.4
1924	214	115	53.7	4.4
1925	211	128	60.6	6.9
1926	204	141	68.8	8.2

Out of the total saving of $78,620,000 per year made possible by the substitution of treated for untreated timber, review of the calculation will show that cross ties are responsible for $55,956,000 or 70 per cent of the total. As about 60 per cent of the ties in tracks now are treated, it is apparent that the roads have already developed a situation for saving 60 per cent of $55,956,000 or $33,573,600 per year. It means that the field in the preservative treatment of railroad timber alone has already been more than two-fifths covered, and that the basis already established for savings is about $92,000 per day,—about one-eleventh of that which this economist had in mind.

This accomplishment simply whets the appetite of the managements of these properties to reap more quickly the remaining three-fifths of the total savings of $78,620,000 per year, which are possible from this item of preservative treatment. When that is accomplished,

more than one-fifth of the million-dollar-per-day saving will have been effected. It amply demonstrates why they could not do otherwise than adopt the policy of support by every reasonable action to this and all other utilization projects sponsored by the Department of Commerce and suggested by the very nature of the economies and advantages that lie within their implications.

Timber Conservation Will Increase Revenues

Reference to some of these projects which most intimately associate the railroad with forest products will demonstrate the wisdom of that policy. Aside from the savings accruing from the reduced consumption of timber used by the railroads, there is the peculiar advantage in the increased freight traffic that will come from reviving the wood-producing and manufacturing interests in territory that has long been abandoned by those industries. More effective uses of greater proportions of the standing timber in those areas is urgently proposed in furthering such a revival.

Railroads cannot prosper in a territory where the natural resources have been exhausted. Lumber had been the basic commodity responsible for the development and extension of many miles of tracks which now form parts of the leading trunk lines of the country. The exhaustion of timber was in most instances succeeded by developments in other lines of industry that expanded the traffic of these carriers on their through-line routes. In all too many cases, however, it resulted in laying waste areas unsuited, by lack of other natural resources, for other industries. Opportunities for quick profits in other regions enticed the pioneers to other fields. The railroads, with large investment in fixed property capable of serving the wasted areas, find themselves with branch lines now a burden of expense. It is not the business of railroads to produce lumber; their job is to transport it efficiently and economically. They are, however, vitally interested in giving any reasonable assistance to those who are in that business and in doing all that they can to husband the resources of the forests.

In the Eastern region of the United States there is even now evidence that the measures here being advocated are assisting in a restoration of lumbering in areas long since forsaken. As a boy, I well remember the season when the sawmill operator of the kind common to that period moved in to cut the timber on mountain sides that had given many hours of boyhood enjoyment. Ruthless in his attack, rejecting every stick that failed to meet his limited market, destroying all that came in his path which was not useful for his purposes, he left the land devastated, and thus it has remained through the years—useless, barren and unprofitable either to the residents of the community or to the transportation companies with facilities ready and waiting to serve.

However, within the past several years the demand for lumber which can be met by the proper utilization of the timber yet remaining, and that of the second growth in that region, has resulted in developing a local operation which is growing substantially, giving employment to the residents and adding to the income and satisfaction of the community as a whole. I am reliably informed that last year one small operator in that community paid the company with which I am connected $50,000 in freight alone for the forest products which he handled. During recent years there has been a turn in the production of lumber in this region, resulting in increased deliveries to the railroads from territory adjoining their right of way. It is indicative that the experience of the one community cited is duplicated in various degrees in many others. Continual education of producer and consumer alike in methods of conservation and utilization undoubtedly will result in a continuation of the growth of industry from those restored operations.

Care in the storage and seasoning of lumber is receiving the intelligent and close attention which those features of conservation demand. Railroads are alive to the necessity for such action in securing the best results in the treatment and use of timber for their own operations. They are no less appreciative of the opportunities for the commercial development of timber-producing and lumber-using industries along their lines through the advantage of a decrease in freight expense to their customer which the greater volume of seasoned lumber will give to him, and the consequent expansion of these industries along their lines.

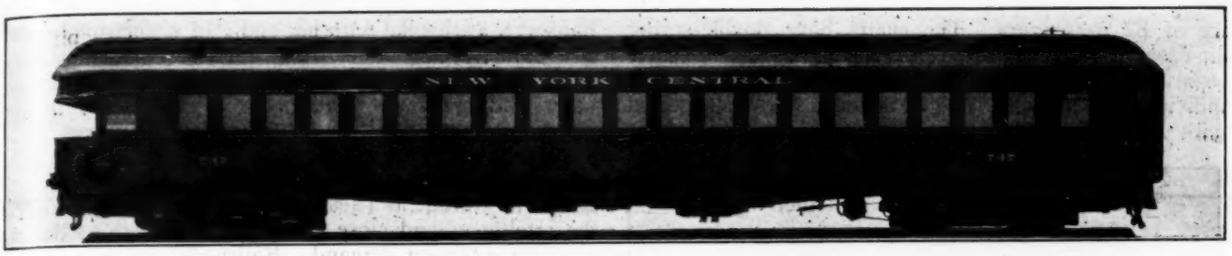
Economies in Pre-Framing Structural Timbers

Milling practices by the railroads are being extended to the end that there shall be a minimum of waste and injury to the woods which they use. Maximum service and minimum expense is the reward. The possibilities in this direction are exemplified by the operation of a wood-working mill on the lines of the road with which I am associated. This mill was built at the timber-preserving plant for the purpose of framing bridge and trestle timbers by machinery prior to treatment, for use over the entire system as a substitute for the former method where such framing was done after treatment and by various gangs scattered over 5,000 miles of road. In addition to rendering ineffective much of the treatment, it was often done under adverse climatic and location situations and practically always by hand, at excessive expense.

This mill was put into operation during 1925. Last year it sized and framed bridge and trestle timbers to a total of 5,138,000 ft. b. m., at a cost which was estimated to save $31,000 compared with former hand methods. The mill cost $32,000; there has been realized a return of nearly 100 per cent on the investment. More important than this saving is the protection given to the timber by the accurate machine framing and the full effect of the subsequently-applied treatment.

Grade marking, the use of short lengths and end-matched lumber, and the utilization of small dimension and low-grade lumber for purposes which it serves just as well as the more expensive higher grade standard length pieces, are items of good practice that will receive more intensive application as a sequence to the advantages which these other economy-producing measures have given, as well as to the inherent benefits which are known to evolve from their application. The hopes and anticipations of this conference in those respects will secure the heartiest response in the active and intelligent co-operation of the managements of the railroads who have always stood ready to apply their facilities for the development of projects that are of benefit to their patrons and neighbors as well as to the country as a whole.

There is no conflict with these proposals for complete efficiency in the utilization of wood which are now universally promoted in the interests of forest conservation, for there is full compensation to the railroads in the durable satisfactions which will come to their friends —the residents of the communities they serve—as well as in the profits to themselves which will accrue from the application of the measures contemplated by these projects.



One of the Observation Cars Used on the New York Central's Day Coach De Luxe Train

New York Central Puts De Luxe Coach Train in Service

Has observation car, dining car and coaches with rotating chairs—Hot and cold water in each car

ON June 24, the New York Central initiated a new de luxe coach train service between New York and Buffalo, in which special provisions have been made for a maximum of comfort and pleasure for coach passengers without extra cost. The new trains, one in each direction daily, leave Buffalo and New York, respectively, at 9:30 a.m. and arrive at their respective terminals at 8:15 p.m., stopping at the principal cities on the way. Specially equipped coaches and observation cars have been provided for these trains by the conversion of standard passenger equipment, with a view to increasing the patronage of coach-train service. The normal make-up of the trains, which is shown in the table, is seven cars, but as many as eleven cars have already been run, including seven of the de luxe coaches—an indication that the public has been quick to take advantage of this service.

Equipment of the Train

Twenty-seven all steel cars which, with the exception of four smoking cars and two dining cars, were built during the latter part of 1927, have been assigned to this service. The equipment consists of fifteen 70-ft. coaches in which double rotating chairs have been installed, four 70-ft. smoking cars, four 60-ft. baggage cars, two dining cars and two observation coaches. The two observation cars were converted by the Pullman Car & Manufacturing Corporation from standard 70-ft. steel coaches. All work in connection with remodeling the remaining 25 cars for the de luxe service was performed at the New York Central shops at West Albany.

The Observation Coaches

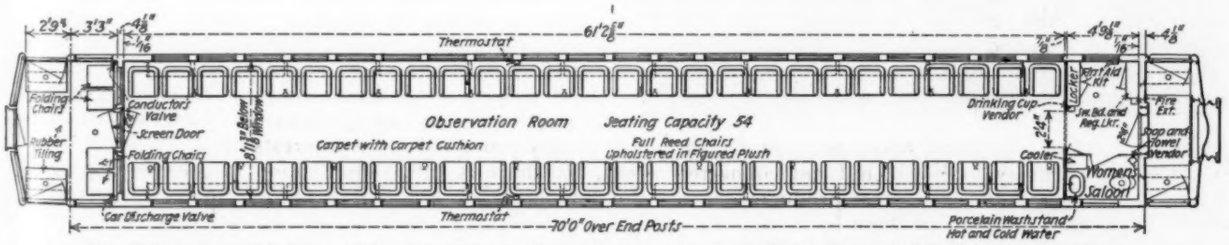
The observation cars have a six-foot observation platform, equipped with an ornamental rail with end and side gates. The platforms, including the trap doors, are covered with inlaid rubber tiling. Four folding chairs are provided on the platform. A canvas canopy, which may be rolled up when desired, extends around the end and sides under the hood, and three recessed electric lights are located in the ceiling. The color scheme of the interior of the observation cars is a combination of light brown and tan in flat colors, with fabric-faced figured window curtains to match. The floors are entirely covered with a heavy brown figured carpet, laid on a carpet cushion.

The seating equipment in these cars consists of 54 movable chairs. These chairs are of solid reed construction with deep air cushions and backs upholstered in figured mohair plush in brown tones to harmonize with the car interior.

A women's saloon only, is provided in the observation cars. This compartment is fitted with a hopper, a porcelain washstand having hot and cold water supply, and a coin-operated soap and towel vending machine. The interior of the saloon is finished in pearl gray enamel with nickel-plated fixtures. A sanitary water cooler is recessed in the saloon front, and cups are supplied from a coin-operated vending machine. Opposite the saloon is a locker for the use of the porter, two attendants being assigned to the train, one in the observation car and the other in the coaches. The electric lighting system consists of 22 deck-sill fixtures in the body of the car in accordance with the railroad company's standard practice.

The De Luxe Coaches

The principal change made in the 15 coaches was the replacing of the standard seats with rotating chairs of the bucket type. Each coach is provided with 40 double chairs and two single chairs, giving a total seating capac-



The Floor Plan of One of the Observation Cars Used on the New York Central Coach Train De Luxe

ity of 82 passengers. The chairs have double-spring air-cushion seats. The two-passenger seats have a center separator as well as side arm rests, making each seat individual in character. All of the chairs are upholstered with a two-tone brown striped mohair plush on the

The Rear End of the Observation Car, Showing the Two-inch Flexible Steam-heat Connections

cushions and the insides of the backs, while the rear and sides are covered with the same material in plain light brown.

The interior finish in the coaches is in walnut graining. The upper and lower deck headlinings are finished in light gray enamel, with the ceiling beams in a darker

The Striped Mohair Upholstery on the Rotating Chairs in the De Luxe Coaches Provides a Pleasing Appearance

shade. A carpet aisle strip is provided in each coach in a brown pattern, harmonizing with the chairs.

Each coach has two saloons, each equipped with a hopper, a washstand with hot and cold water supply, and soap and towel vendors. The interiors of the saloons, as in the observation cars, are in pearl gray with nickel-plated fittings. The lighting arrangement, as in the observation cars, consists of 22 deck-sill fixtures.

A feature of these cars, which has been adopted as standard, is a type of parcel rack which has brackets supporting the rack from below, providing a continuous rack, without top obstructions, the full length of the car on each side. This permits the placing of long parcels in the rack without interference with the supports as is the case with the top-supported form of rack. One coin-operated vendor and one free flat-cup receptacle, are located in each car.

The smoking cars, which seat 85 passengers each, are equipped with the usual type of reversible seats, upholstered in green figured plush. The cars have been redecorated inside with a light maroon enamel with pearl gray headlining and maroon ceiling beams. An inlaid aisle strip has been provided the full length of the car, flush with the top of the floor, of checkered rubber tiling with a brass binder on each edge. Each smoking car has two saloons, each with a hopper, washstand with cold water, and a soap and towel vendor.

Fifty-four Solid Reed Chairs are Provided in Each Observation Car

The two dining cars in service on these trains are modern cars, seating 36 persons and are decorated and grained in brown mahogany. Special menus, on which is printed the name of the train, are furnished.

All of the cars in the train are equipped with thermostatic control for the vapor heat, except the baggage cars, in which manually operated valves are used. In the coaches and observation cars, two thermostats are used, one on each side of the car, controlling the magnet shut-off valves on each side of the car independently. One thermostat is provided in each of the dining and smoking cars.

On the entire equipment for both trains 2-in. steam-heat end valves, with 2-in. flexible metallic steam connections, have been installed. In order to furnish hot water for the wash basins in the coaches and observation cars, steam is supplied to the train line at all times. A branch steam pipe from the main steam line, equipped with a vapor regulator, is connected to a hot-water jacket under the wash basin in each saloon. Water is supplied to this jacket by gravity from an overhead water tank in the saloon, which also supplies cold water for the wash basin and for the hopper.

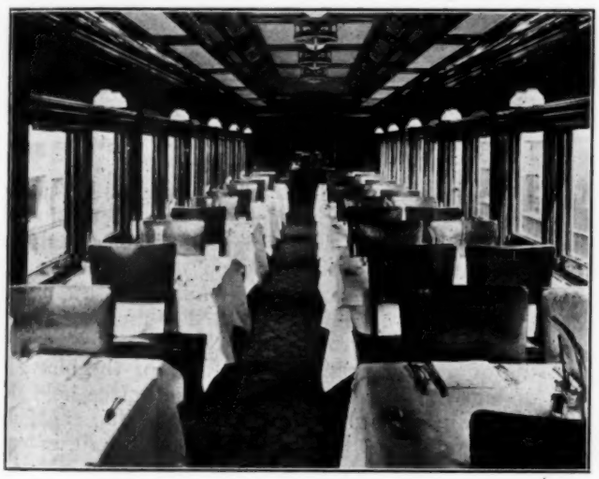
Each car in the train is provided with a fire extinguisher, emergency tools and first-aid kit. The observation car is equipped on the rear end with electric markers, outlets being located in the ceiling under the hood for cable attachment to the marker lamps.

In the coaches and observation cars, removable metal-frame copper wire screens are provided for every other window, under the outside sash. In the dining cars, screens are located at each window in the dining compartment, fitted with cinder deflectors.

The Normal Make-Up of the N. Y. C. "Day Coach De Luxe" Train

No. and type of cars		Weight
1	Baggage	111,750 lb.
1	Coach smoker	134,700 lb.
3	De luxe coaches (132,950 lb. each)	398,850 lb.
1	Dining car	172,700 lb.
1	Observation coach	127,800 lb.
7	Total	945,800 lb. or 473 tons

In equipping the coaches with the bucket-type seats, and installing water heating equipment and other details, the weight of the de luxe coaches was increased about 3,000 lb. over their weight prior to conversion. The observation coaches are approximately the same amount lighter than with their original construction. The modifications in the other cars made no appreciable difference in their individual weights. The table shows the weights of the cars comprising one train of normal make-up.



One of the Dining Cars

The exteriors of all of the cars were revarnished. All of the cars are of the latest all-steel construction, a uniform appearance is obtained, resulting in a train which is attractive on the exterior, as it is in the interior, and which from all standpoints, represents a distinct advance in strictly coach train service.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended July 28 amounted to 1,033,976 cars, an increase of 160 cars over the preceding week but a decrease of 10,721 and 62,021 cars respectively as compared with loading in the corresponding weeks of 1927 and 1926. Only the loading of miscellaneous freight was larger than a year ago. Loading in the Central Western and Southwestern districts was larger than last year but the totals in other districts showed decreases. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, July 28, 1928

Districts	1928	1927	1926
Eastern	234,045	235,729	251,107
Allegheny	208,628	211,631	224,600
Pocahontas	56,965	59,926	61,840
Southern	142,079	151,324	148,749
Northwestern	157,697	159,943	167,780
Central Western	154,407	150,123	162,205
Southwestern	80,155	76,021	409,701
Total Western Districts	392,259	386,087	409,701
Total All Roads	1,033,976	1,044,697	1,095,997
Commodities			
Grain and Grain Products	55,265	58,801	62,739
Live Stock	22,046	26,434	27,034
Coal	156,213	158,412	192,454
Coke	8,632	9,524	11,386
Forest Products	65,768	69,544	72,078
Ore	62,577	64,442	75,118
Merchandise L.C.L.	255,192	256,745	256,250
Miscellaneous	408,283	400,795	398,938
July 28	1,033,976	1,044,697	1,095,997
July 21	1,033,816	1,012,585	1,078,193
July 14	1,024,534	1,017,394	1,076,372
July 7	850,605	839,085	897,556
June 30	1,003,049	1,021,438	1,065,641
Cumulative total, 31 weeks	28,400,036	29,434,801	29,481,350

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended July 28 totalled 69,208 cars, a slight decrease from the previous week but an increase of 6,968 cars over the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
July 28, 1928	69,208	37,743
July 21, 1928	69,464	37,654
July 14, 1928	69,047	36,331
July 30, 1927	62,240	35,958
Cumulative Totals for Canada		
July 28, 1928	1,932,941	1,165,133
July 30, 1927	1,818,842	1,142,524
July 31, 1926	1,725,519	1,117,094

* * * *

General View D. L. & W. Yards, Secaucus, N. J.

Jordan Spreader Provided with New Features

THE amount of work that can be done by a spreader is contingent on its weight and the spread of its wings when it is operated by a locomotive with sufficient tractive power to develop the full capacity of the machine. With this in mind, the O. F. Jordan Company, East Chicago, Ind., conducted some studies of its spreaders in service on various railways, and as a result has brought out a new spreader which, in addition to being larger and heavier than its previous models, embodies other improvements to afford greater flexibility in operation and economy in spreading and ditching. The differences between the new and the older models are shown in the following data.

	Older car	New car
Total weight	85,000 lb.	115,000 lb.
Length of car	35 ft.	50 ft.
Maximum spread of wings*	21 ft. 6 in.	24 ft. 3 in.

* The spread for the old car is for an angle of 52 deg. from the center line of track, while that for the new car is based on an angle of only 45 deg.

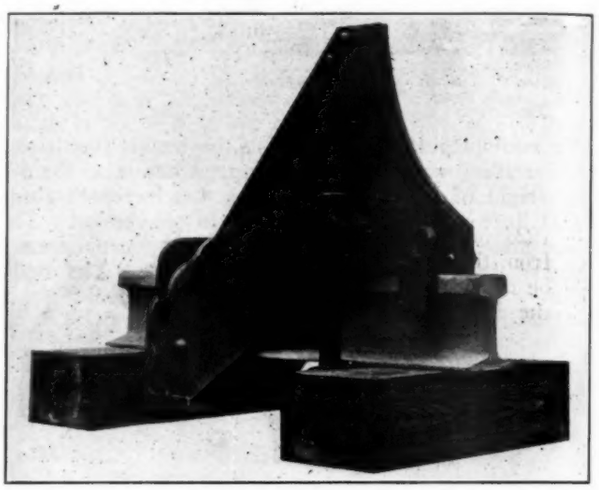
The center of gravity of the new car is 40 per cent lower than in the older models, and this, with the greater weight, insures greater stability, with a more uniform grade in ditching. An entirely new feature, more distinctive than the increase in size and weight, is the introduction of a telescopic hydraulically-operated wing brace by which the operator can change the spread of the wings instantly while the car is in motion, thus permitting its operation where fixed objects would interfere with the older types of spreader.

The wings, in the level position, will cut to a depth of three feet below the top of the rail, but if desired, the outer ends of the wings can be raised three feet above, or lowered five feet below the inner ends, thereby making it possible to spread to a level surface on curves where the superelevation of the track causes the car to assume an inclined position. The front plow can be lowered so that its bottom edge comes to within one-half inch of the top of ties, and thus, in ballasting, can be used to remove practically all the ballast from above the ties.

The operating cylinders of the new car are designed so that the changes in the position of the wings and the plow can be made easily with an air pressure of 60 lb. per sq. in. The new car is provided with a cab for the operator.

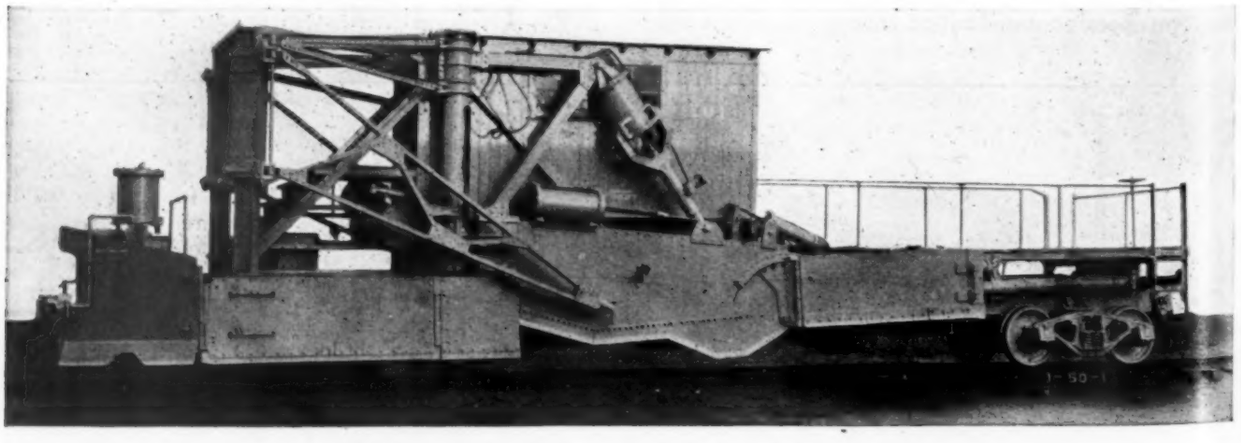
The Hayes Wheel Stop

A WHEEL stop which utilizes the action of a track skate, together with the use of one of the ties in the track and the ballast in which it is embedded to absorb the shock of the impact, has been developed and placed on the market by the Hayes Track Appliance Company, Richmond, Ind. The design is simple, permitting it to be applied quickly to any rails from four to seven inches high without drilling any holes or driving any spikes.



The Hayes Type S Wheel Stop in Position

The device consists of a wheel-engaging block on each rail, these blocks being built up of structural steel plates with rivets and fillers in such manner that the forward end of the block rests on the rail while the rear end straddles the rail, and extends below the top of the ties. The rear ends are supported at their lower extremities by a yoked casting which also bears against the side of a tie to transmit the force of the blow. A pair of lugs at the forward end of the device hold the block in position on the rail, while two bolts, engaging a bar bearing against the under side of the rail, extend upward on either side of the rail and through a pin which is carried through the block to assist in holding the block in a vertical position when it is struck by a moving car.



The New Spreader Equipped With Ditcher Wings

The Utilization of Locomotives*

A review of trends in freight and passenger service since 1920—Present power conditions

By C. B. Peck

Managing Editor, Railway Mechanical Engineer, New York

WHAT has happened in the use of locomotives since 1920 is fully as remarkable as what took place with respect to freight cars. There was an average of 30,081 freight locomotives on the lines of the Class I railroads in 1920. The number increased slightly following 1920, declining again to 30,570 during 1927. Since 1922 there has been a steady decline in the percentage of unserviceable locomotives, the effect of which on the total number of serviceable locomotives is indicated by the second line from the top of the graph. There has been considerable fluctuation in the number of freight locomotives stored serviceable since 1920, the number decreasing in the years of heavy business like 1923 and 1926. By deducting the stored locomotives from the serviceable, the freight locomotives which may be considered as being in active service are shown by the third line in the graph.

Intensity of Use

How has this locomotive supply been used? There was a decline in the intensity of the use of the active locomotives following 1920 which is indicated by the average miles per year which these locomotives made. Starting with 32,500 in 1920, the average freight-locomotive mileage dropped to 28,000 in 1921, and with the exception of a slight decline in 1924, it increased steadily but slowly until it reached 30,100 during the peak year of 1926. What is most striking is the fact that with the decline in business in 1927, the actual use of the active locomotives has shown a marked increase to an average mileage of 33,000. This is illustrated in Fig. 8.

Beginning with 1922, for which the figures are first readily available, the average tractive force of locomotives in freight service was 42,452 lb. This increased steadily until in 1927 it had reached 48,000 lb. During the same period the gross train load had increased from 1466 tons to 1780 tons. In Fig. 12 it will be seen that this increase in train load was considerably greater than the increase in the average tractive force of the locomotives, indicating a better average utilization of the potential tractive capacity. This improvement, in the face of the increase in average train speed from 11.1 miles per hour in 1922 to 12.3 miles per hour in 1927, indicates a splendid performance. The combined effect of this increase in train load and train speed is indicated by the gross ton-miles per train-hour which were 35 per cent greater in 1927 than in 1922.

So far as the locomotive is concerned, this is a reflection of the tendency toward increased horsepower capacity in modern locomotives. Attention must, however, be called to the fact that locomotive utilization is affected by the character of other facilities such as signals, passing tracks, and yard facilities. There was a period following the termination of Federal control during which the lack of these facilities in adequate quantity exercised a material influence in keeping down the average train speed and materially increasing train-hours. Long delays on poorly located passing tracks and equally long delays awaiting yard track space in which to put away the train at the end of the run, not infrequently consumed from one-quarter to one half of the total train-hours. The performance reflected in Fig. 9 is in part the result of a constantly improving coordination of all of the facilities affecting train movement.

Activity of Passenger Locomotives

The number of active passenger locomotives has varied but slightly since 1921. There has been a decrease in ownership, a decrease in unserviceable locomotives, but an increase in the margin stored serviceable. The variation in the relationship of passenger train-miles, the number of active locomotives, and the yearly average miles per active passenger locomotive has been much less than the variations in the similar relationships for freight locomotives. It is, however, interesting to note on Fig. 10 that since 1921 there has been a steady, although not large, increase in the miles per active locomotive per year until 1925, and a much greater increase in 1926.

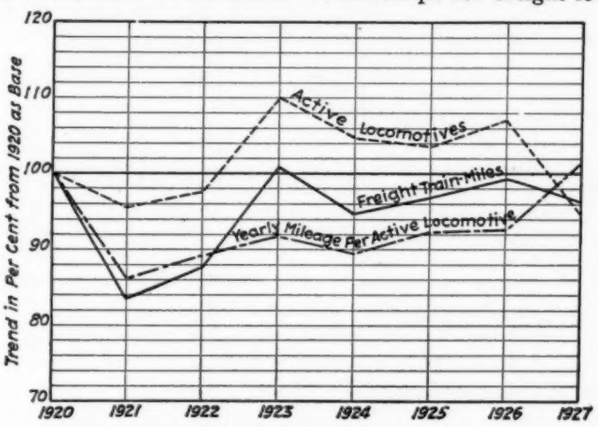


Fig. 8—Trend in Yearly Mileage per Active Freight Locomotive

It is in passenger train service that the most effective results are obtainable from long locomotive runs. The movement toward increasing passenger locomotive runs has been progressing steadily for several years and has undoubtedly been the major influence in producing this increase.

It was possible to show clearly the relation between the increase in the average tractive force of the locomotives and the gross tons per train in freight service. The data are not available from which to show this relationship with equal clearness in the case of passenger locomotives. There has been a steady increase in the average tractive force of passenger locomotives just as there has been in the case of freight locomotives. In 1922 the average was 26,745 and in 1927 it had reached 30,800 lb. The aver-

* Abstract of the second part of a paper contributed by the Railroad Division and presented at the spring meeting of the American Society of Mechanical Engineers, Pittsburgh, Pa., May 14 to 17, 1928.

age passenger train in 1922 consisted of 6.4 cars and had increased to 7 cars in 1927. How this increase in the train length compares with the increase in the tractive force of the locomotives is indicated in Fig. 11.

The average length of the passenger train, however, does not tell the whole story. In 1922, of the 6.4 cars per train, an average slightly less than 2.0, probably about 1.8, were sleeping, parlor, or dining cars. Probably about

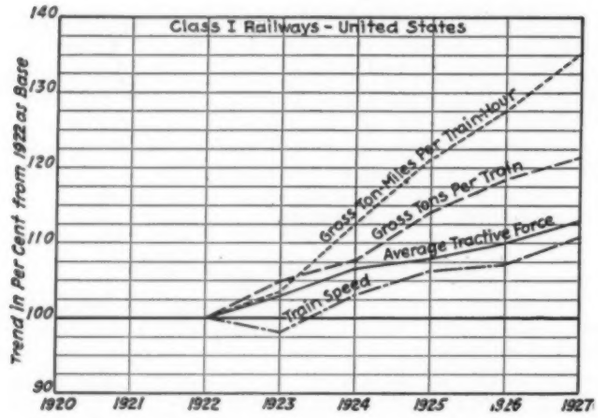


Fig. 9—The Relation of Train Load to Tractive Capacity and the Trend of Ton-Miles per Train-Hour

2.5 cars of the 7-car train in 1927 were of this heavy type of equipment. Furthermore, there has been a steady increase in the number of steel and steel underframe coaches, baggage, and express cars, with a corresponding decrease in the number of wood cars. The total number of passenger cars of railroad ownership in service has not changed materially from between 54,000 and 55,000, but at the beginning of 1923, 24,000 of these cars were of steel or steel underframe construction and, in 1927, some 34,000 were of steel or steel underframe construction.

How far this increasing weight of the average car of railroad ownership and the increasing number of Pullman cars in the train has tended to increase the weight of the train above that indicated by increase in length, it would be very difficult to say.

Locomotive Conditions

In the discussion of cars, an attempt was made to show what the railroads have done in keeping up the quality of

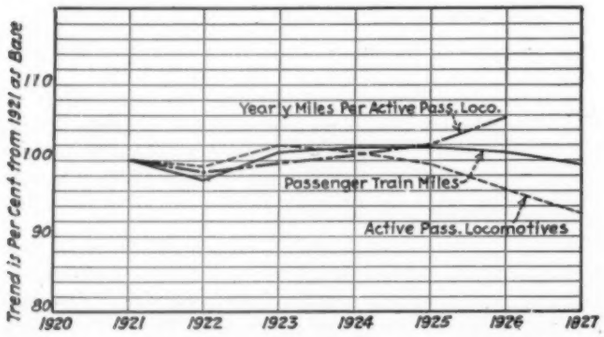


Fig. 10—Trend in Yearly Mileage per Passenger Locomotive

the cars in service. Much the same information is available for locomotives. Of 62,400 locomotives in service at the end of 1926, 63.5 per cent were installed since 1911.

In other words, approximately 64 per cent of the power in service at the end of 1916 was then 16 years old or less. Of these locomotives, 23,700, or approximately 38 per cent of the total locomotives in service, had been installed since 1916 and were 10 years old, or less, and 14,700 or approximately 25 per cent of the total number of locomotives, had been installed since 1920 and were not over 7 years old.

Here the term "installed" implies the same thing as it did in the case of cars and if one follows the curves on Fig. 12, it will be evident that many locomotives installed in 1923 were old locomotives which were rebuilt either in the shops of the roads or in contract shops and accounted for as new locomotives in the books of the carriers. These locomotives were in most cases rebuilt with betterments and, though not wholly modern, they are probably all equipped with some of the appliances which characterize the modern locomotive.

Table 3—Freight-Train Performance

Year	Train miles (000)	Locomotive miles (000)	Train load Gross	Train load Net	Average miles per hr.	Gross ton-miles per train-hr.	Average miles per day, all locos.	Average miles per year, active locos.
1920	634,201	718,605	1443	708	10.3	14,890	65.3	32,500
1921	529,177	593,552	1435	651	11.5	16,550	49.4	28,000
1922	554,780	623,885	1466	677	11.1	16,220	52.0	29,000
1923	641,556	725,663	1539	713	10.9	16,790	60.3	29,800
1924	600,576	673,289	1588	715	11.5	18,257	54.5	29,100
1925	612,865	689,797	1670	744	11.8	19,679	58.2	30,000
1926	632,557	713,875	1737	772	11.9	20,705	61.8	30,100
1927	610,497	689,177	1780	778	12.3	21,945	...	33,000

An interesting fact brought out in Fig. 12 is the large number of locomotives retired in 1925 and 1926, with relatively small numbers of locomotives installed during

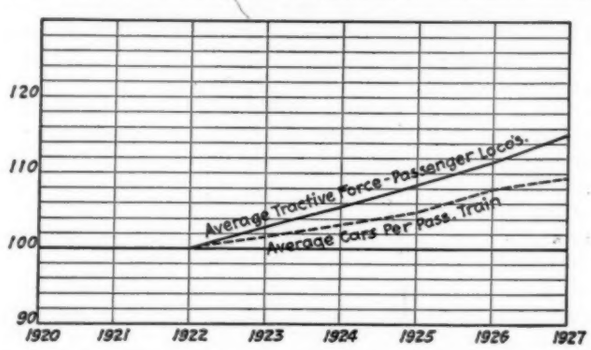


Fig. 11—Trend in Passenger-Locomotive Tractive Force and Train Lengths

those years. This suggests a marked clean-up of obsolete power. The decrease in the total number of locomotives which these retirements have effected has been of small moment so far as its effect on the aggregate locomotive capacity is concerned.

The decline in the percentage of unserviceable locomotives has already been mentioned. As in the case of cars, this has been accompanied by a decline in the aggregate amount of labor expended in locomotive maintenance. The monthly hours paid for machinists' labor may be used as a rough index. Starting with about 12 million in the fall of 1921, there was a heavy reduction during the strike to a low point of about 4 1/3 million. By January, 1923, a high point of almost 16 million was reached. There was a decline to 12 million by the middle of 1924. Following a rise to 13 1/3 million at the end of the year, there have been no further sharp changes, the average remaining between 12 and 13 million throughout 1925 and 1926. The average during 1927 has been slightly under 12 million, in keeping with the decline in the business handled last year.

Conclusion

The essential facts pertaining to the locomotive situation may be summarized as follows. There has been a

relatively small change in the number of locomotives in service since 1920. Increases in the number of locomotives during the first years of this period have been offset by decreases during the past three years. No immediate shortage of power is indicated, however. The condition of the power has improved and, owing to more intensive use, there is an increased reserve of serviceable locomotives. Freight train-miles continue to decrease owing to the increase in unit tractive capacity and train load. The increasing train speed has decreased train-hours in greater proportion than train-miles have decreased.

Table 4—Passenger-Train Performance

Year	Train miles (000)	Locomotive miles (000)	Average cars per train	Average miles per day, all locomotives	Average miles per year, active locomotives
1920	555,201	583,774	6.4	....	.....
1921	543,808	567,848	6.4	....	51,800
1922	530,197	554,953	6.4	....	51,000
1923	549,841	577,101	6.5	....	51,600
1924	553,253	577,876	6.6	108.6	52,200
1925	553,344	578,525	6.7	110.3	53,000
1926	550,386	576,441	6.9	113.8	54,800
1927	539,297	.....	7.0	114.4	.....

There is still another problem of utilization with respect to locomotives. That is, taking advantage of the highly developed traveling power plants which have become available within the past five years—locomotives which materially exceed the capacity possible to obtain within the range of proportions commonly adhered to no more than five years ago.

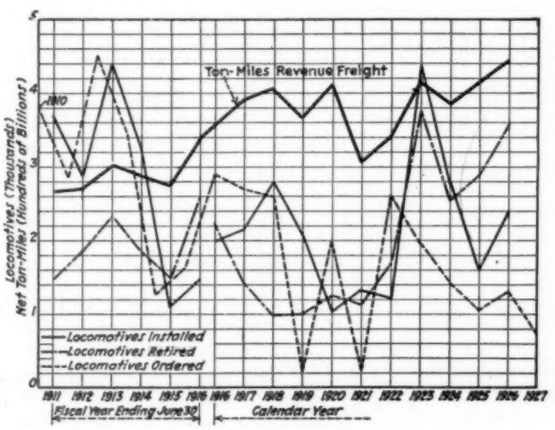

Ton-Miles Revenue Freight
1910
Locomotives (Thousands)
Net Ton-Miles (Hundreds of Billions)
Locomotives Installed
Locomotives Retired
Locomotives Ordered
1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927
Fiscal Year Ending June 30
Calendar Year

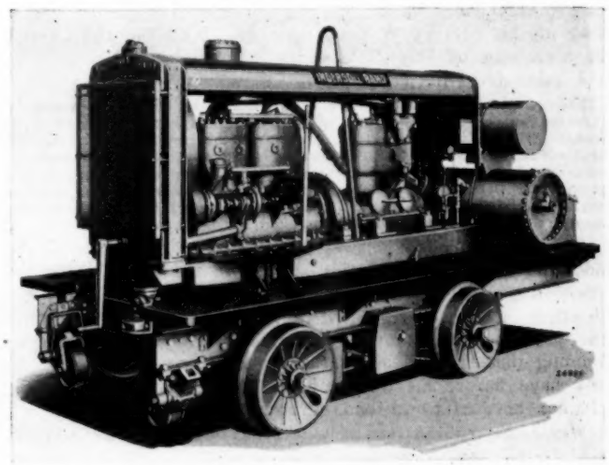
Fig. 12—Locomotives Ordered, Installed, and Retired Since 1911

When one considers that the splendid performance, particularly in freight-train service with its reduced train-hours and greatly improved fuel economy of the past three years, must have been in great degree the result of the better coordination of facilities previously referred to, it is evident that there is still a big future for continued improvement in these respects when completely modern locomotives come into use in sufficient numbers to make their influence generally felt.

Major dependence for improvement in operating economy was for many years placed on increasing tractive capacity and train load. Each train-mile saved in this way, at present, saves about $1.50. In 1926 each overtime freight train-hour saved by the Class I railways effected an average saving of $9.10 for wages. At their face value these facts would seem to emphasize the rich field for locomotives of high horsepower capacity, wherever crew overtime has to be paid for.

Ingersoll-Rand Improves Its Tie Tamper Compressors

THE Ingersoll-Rand Company, New York, has recently brought out an improved model of its 4-tool, 8-tool and 12-tool tie tamper compressors, in which the most important deviation is the method of self-propulsion. Heretofore, all of the self-propelled tie tamper compressors manufactured by this company were friction drive, but in order to provide what is said to be a more dependable and durable method of drive, the new compressor models are equipped with an independent motor for locomotion. The prime mover in this new method of drive is a four-cylinder air motor which is connected to the drive axle by a sprocket and chain arrangement. This method of drive, which provides a wider range of speed than was possible with the friction type of drive, also permits better control.



The Model 8-Tool Compressor With Air Motor Drive

Another feature of the new method of driving is that the airmotor, which is mounted beneath the car, functions also as an auxiliary brake, so that when on descending grades there is no possibility of the unit attaining a dangerous velocity. The valve operation of the air motor is linked to a long lever which extends above the floor of the car, inside the compressor housing, and high enough to enable the operator to reach it when in a standing position. Through this arrangement, the operator has full control of the air motor, and at the same time, is in the proper position to reach the foot brake. As the foot brake acts upon the idle axle while the air motor is connected with a driving axle, the braking action secured is practically equivalent to providing the compressor with four-wheel brakes.

Other features of improvement in the new models consist of the provision of a draw bar connection at each end for towing purposes, and a new type of transverse wheels for derailing the equipment. The new transverse wheels are of the swivel type, and are fitted with a bar hole for raising and lowering them. Through this arrangement the new type wheels can be used as lifting jacks, and when so employed, they obviate the necessity of using hydraulic, pneumatic or other types of jacks for moving the compressors.

Communications and Books

More About Railroad Cost Accounting

To the Editor:

There has probably been no more startling development in the accounting field during the last decade than the present controversy over cost accounting as applied to the railroads; and, in this connection, your editorial, "Knowing the Costs," in your issue of July 21, is of exceptional interest.

I quote from the editorial, as follows:

> The local accounting and statistical activities on individual roads may be regarded as the outposts of railroad accounting science. Unfettered by iron-clad rules of division and procedure as is the case with the prescribed uniform accounting, the railroads may try out new ideas and new methods, retaining those which prove successful and discarding those which do not prove their worth. For accounting resembles any other science, such as engineering, for instance, in that it needs a laboratory in which new ideas may be tested; theoretical conclusions alone are not safe.

This is an excellent answer to those who are advocating the adoption of compulsory cost studies in connection with the revision of I. C. C. classifications, for these "local" plans are in effect on all well regulated railroads and serve to confound the pseudo-engineers and "economists" who have been contending that railroad accounting systems are obsolete.

I have before me a text book on economics and in the chapter devoted to rairoads I find the following:

> Why cannot railroad rates be determined as easily as the prices of ordinary commodities?
>
> Why cannot bulk and distance determine rates?
>
> The price of an ordinary commodity is based chiefly on the cost of the materials and labor which go into its making which can be determined more or less accurately. *In railroad transportation it is impossible to figure costs. There is no material or labor that is devoted exclusively to the transportation of any particular article.* [Italics mine.] The main expenses are fixed; that is, they do not vary with changes in volume of business. The care of the road, the rental of terminals and roads, the interest on bonds continue the same whether much or little freight is transported or whether many or few passengers travel on it.
>
> Bulk alone cannot determine railroad rates for that would make prohibitive the transportation of such commodities as coal, ice, or lumber which have low values in relation to their bulk.
>
> Distance alone cannot determine rates for that would make prohibitive the transportation of some necessities such as milk which is brought to large cities from farms more than a hundred miles distant.

The answers to the foregoing questions, while brief and touching very lightly upon the complexities of the problem, contain, nevertheless, sufficient truth to support the principles upon which railroad accounting theory has been predicated. The first answer points out the difficulty of determining accurate costs in the transportation business, and the second infers that, even though such costs were determinable they could not be used exclusively as a basis for rates. Transportation cost, while of utmost importance in its entirety, in that total expenses should not exceed total revenues, is, at the same time, one of the least important factors to be reckoned with in the determination of an individual rate. It is understood, of course, that no railroad can continue to carry *all* of its traffic at less than cost and keep out of the hands of receivers, but there are so many other factors affecting a railroad rate that cost alone fades into the background.

There is a popular theory, entertained by those who discuss but do not work at railroad accounting, that the accounts should be so designed as to show the items of expense which produce each class of revenue. Such a classification would be ideal, but, because of the great number of items which must be apportioned, it is hardly practicable. Moreover, a classification of primary charges and credits is not intended for that purpose. As the word "classification" implies, it is rather intended for the purpose of segregating or isolating into one account all items of a similar class or character. When this is done the work has just begun. It then devolves upon the accounting officers to evolve those "local accounting plans" so pointedly referred to in your editorial, and the figures accumulated in the various accounts of the classification may be put to any use which circumstance or occasion may require.

One naturally inquires of those who have set up the hue and cry for cost accounting in the railroad field, "Is there any such animal?" Those who are familiar with cost studies in manufacturing and so-called industrial operations (where the principle may be more easily applied) know there is no such thing as an exact cost and that he who attempts to reveal costs automatically in a complex business is "shooting at the moon." The best and simplest of costing methods are fraught with a great profusion of arbitraries and percentage apportionments. This, however, does not detract from their value and *when the occasion demands* such studies should be made; but it does not follow that much time and money should be devoted to the compilation of figures for which some use *may* be found at a later date.

An important point in this connection is the fact that the individual figure in an accounting system is of small importance. It becomes important and reveals its hidden facts only when compared with similar figures for another period or another operation. For example, the road with which the writer is identified has in effect a "local accounting plan" for determining the comparative costs of handling car-load and less-than-car-load freight. It is not claimed that this plan reveals even the approximate cost of either service. With a greater expenditure of time, items of overhead or "common" expense could no doubt be spread more equitably between the various classes of revenue. But they are *always* apportioned in the same manner, so that from the comparative standpoint the statement has developed considerable value to the management. To illustrate, July of this year may show a higher cost of handling than July of last year. Neither figure may be within a mile of the truth, and, consequently, may be of little value from a rate-making standpoint; but it enables the management to keep a finger upon the pulse of the business and to call for explanations in those cases where increases or decreases appear abnormal.

In the controversy which is now raging the critics of railroad accounting are calling for publicity of cost figures, implying that cost data have been concealed from the public (through inability or unwillingness on the part of the railroads to furnish such information) and contending that the information should be furnished automatically through the medium of I. C. C. classifications. It is true that local cost studies do not supply this want; that is, not automatically. But railroads, or those railroads with which we are dealing, are common carriers subject to the jurisdiction of the state and federal commissions and, if there is anything the public wishes to know, legal channels have been established through which the information may be obtained. A railroad has little more privacy than the proverbial gold fish and, notwithstanding the wishes of its critics it is rather refreshing to discover something that has not been revealed by the thousands of formal and informal investigations of the past twenty years.

In conclusion, permit us to observe that the "local plan" is about as far as cost accounting may be carried in the railroad business, and, to the credit of the accounting and statistical officers of the carriers, it should be stated that such plans have been in effect upon most roads for a great number of years. As conditions change, statements and reports do likewise, but the effort to get at the facts goes on forever. Why not, then, give the accounting officer credit for what he has accomplished, instead of criticising him, for having failed to accomplish a task which (considering the money and facilities at his command) is next to impossible?

G. M.

New Books

Saward's Annual, 1928. By Frederick W. Saward. 256 pages, 6 in. by 8 in. Published by Saward's Journal, 15 Park Row, New York.

Saward's Annual is a statistical review of the coal trade

embracing the details relative to output, prices, freight rates, transportation, exports, trade conditions, computing tables and other details of importance to the coal man, both wholesale and retail. This, the tenth edition, contains statistics for 1927 or latest available dates.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Hill Country, by Ramsey Benson. A prize novel based on the life of James J. Hill, installments of which have been noted in previous booklists. 356 p. Pub. by Frederick A. Stokes Company, New York City. $2.50.

Revue Générale des Chemins de Fer—Livraison du Cinquantenaire, 1878-1928. July, 1928. Fiftieth anniversary number reviewing French railway and French colonial railway history of the period. 189 p. Pub. by Dunod, Paris (VI), France. 8 francs.

Interstate Commerce Commission Rules to Govern the Construction and Filing of Freight-Rate Publications Including Pipe-Line Schedules and Classifications—Administrative Rulings, revised by order of Commission. Effective October 1, 1928, except as noted in individual rules. Tariff circular No. 20 canceling freight rules of tariff circular No. 18-A and supplements Nos. 3 and 4, Special circular (Bur. of Traffic) No. 11, and Special permission Nos. 53,368 (amended) 61,041, 63,115, and 64,290. 134 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. 20 cents.

Periodical Articles

A. W. Somerville. Biographical sketch, with photograph, of a writer of short stories of railroading. Saturday Evening Post, August 4, 1928, p. 36, 40.

Has Aviation a Future?—A Debate. I. The Limits of Commercial Aviation, by Capt. Alfred Dewar. II. Facing Aviation's Critics, by Commander Richard E. Byrd. Forum, August, 1928, p. 166-171.

The World's Railways During the Years 1922, 1923, 1924 and 1925. Brief statistics by countries. Bulletin of the International Railway Congress Association, July, 1928, p. 537-550.

The Railroads Are Getting Together, by J. Frederick Essary. "Progress toward mergers." Nation's Business, July 1928, p. 27-28, 90, 92.

The 'Success to the Railroad Flask.' Identification of one type of railroad antique that is much sought after. Illustrated. House Beautiful, July 1928, p. 104.

Two Important Short Line Railroads, by Paul T. Warner. Illustrated histories (with emphasis on motive-power development) of the Lehigh & New England, p. 3-15, and the Lehigh & Hudson River, p. 16-24. Baldwin Locomotives, July 1928, p. 2-24.

Progress of Farm Relief, by John D. Black. More than one person will be grateful for the chronology of farm relief activity in Congress and elsewhere on pages 262-265. American Economic Review, June 1928, p. 252-271.

Industrial Co-operation as an Economic Factor, by Sir Josiah C. Stamp. "A Concrete Scheme [i.e. that on the London, Midland & Scottish Railway] in Practice" p. 490-496. Journal of the Institute of Transport, July, 1928, p. 486-497, with Discussion, p. 497-507.

The Main Passenger Station Building of the New Milan Station, by Alberto Fava. Some comparative dimensions of large European passenger stations are given in this article. Illustrated. Bulletin of the International Railway Congress Association, July, 1928, p. 537-550.

A Noble Language, by Daniel G. Mason. A whimsical account of the pleasures of traveling in French in which a grade crossing is "passage à niveau" or simply "PN" on maps, and "heures d'affluence" is apparently more dignified in many ways than our equivalent "rush hours." Harper's Magazine, July 1928, p. 252-254.

Looking Backward

Fifty Years Ago

In the disgraceful search after excuses for repudiating obligations to railway companies a county in Indiana, Jefferson, proposes to the court that it ignore a subscription of $110,000 voted to aid in the construction of the Bedford, Brownstown & Madison on the ground of a variation of one syllable in the official documents—the word "railway" having been used instead of "railroad".—*Railway Age,* August 8, 1878.

The steady decline in the price of steel and iron rails during the past four years is one of the notable facts of the period. Bessemer steel rails fell from $121 per ton in January, 1873, to $40.50 in December, 1877, a decline of about 66 per cent. Iron rails were quoted at $83.33 in January, 1873, and at $33 in December, 1877, a decline of over 60 per cent.—*Railway Age,* August 8, 1878.

Articles of incorporation were filed on August 6 by the Minneapolis, St. Cloud & Sauk Rapids which will build a railroad from Sauk Rapids, Minn., to Minneapolis, connecting at the former place with the Brainerd branch of the Northern Pacific and making Minneapolis instead of Duluth, Minn., the principal eastern terminus of the latter road.—*Chicago Railway Review,* August 10, 1878.

Twenty-Five Years Ago

The Interstate Commerce Commission has granted the Boston & Maine an extension of time until October 15, 1903, in which to equip all of its locomotives and cars in passenger service with automatic couplers.—*Railway Age,* August 14, 1903.

Railway express companies are the latest interests to feel the unlimited power of the Texas Railway Commission over common carriers, that body having issued an order making a 10 per cent reduction in express rates throughout the state and also requiring the companies to maintain general offices in Texas.—*Railway Age,* August 14, 1903.

The Mobile, Jackson & Kansas City [now the Gulf, Mobile & Northern] has awarded a contract for the construction of a line between Newton, Miss., and Pontotoc, 150 miles. Construction has already been started on the line between Newton and Beaumont, Miss., 95 miles. This company, on July 1, leased the Gulf & Chicago, which is now in operation between Middleton, Tenn., and Pontotoc and expects to use it as part of a through line between Jackson, Tenn., and Mobile, Ala.—*Railway and Engineering Review,* August 8, 1903.

The air brake has completely superseded the hand brake in the Rocky Mountain region of the West, where 3 and 4 per cent grades are frequently encountered, according to a pamphlet issued by the Interstate Commerce Commission. On most of the Pacific roads it is now considered a disgrace by the enginemen to have hand brakes on cars set on heavy grades. The mountain grades in the East do not often exceed 2 per cent, and the operation of heavy freight trains has for some reason developed the practice of using hand brakes in addition to air control.—*Railway Age,* August 14, 1903.

Ten Years Ago

William Sproule has resigned his position as president of the Southern Pacific to become district director of the western railroads in the Central Western region.—*Railway Review,* August 10, 1918.

The Western region of the United States Railroad Administration has been divided into three regions, the Southwestern, the Central Western and the Northwestern. B. F. Bush, president and receiver of the Missouri Pacific, has been appointed director of the Southwestern, Hale Holden, president of the Chicago, Burlington & Quincy, has been appointed director of the Central Western region, and R. H. Aishton, president of the Chicago & North Western, has been appointed director of the Northwestern region.—*Railway Age,* August 9, 1918.

Odds and Ends of Railroading

Of the railroads which have a large percentage of officers who are erstwhile key-pounders, the Louisville & Nashville can claim a place near the top, according to L. G. Waldrop, superintendent of the Nashville terminals. Leaving out of account the traffic and mechanical departments, which have as officers a few ex-telegraphers, he lists the following positions filled by men who got their start at the key: an executive vice-president, a general manager, an assistant superintendent of transportation, a superintendent of telegraph, a superintendent of safety, a director of personnel, two assistant directors of personnel, nine superintendents, six assistant superintendents, 17 masters of trains, 13 assistant masters of trains and a superintendent of transportation—total, 54.

A New Peril

An airplane bound from Pittsburgh to the naval air service station at Washington, landed on the main track of the Pennsylvania a short distance north of Rockburn station on the Baltimore division, on the afternoon of June 13. With the assistance of local volunteers it was removed from the track and traffic resumed, after a short blockade.

The First Train Newspaper

The *Railway Age* of July 21 contains an item to the effect that the Union Pacific is to publish a daily paper on the Gold Coast Limited, together with an expression of belief that the paper is the first of its kind. It may interest you to know that on the first Pullman transcontinental train, a special carrying the Boston Chamber of Commerce from Boston to San Francisco, May-July, 1870, a daily paper called "The Transcontinental" was published on a Gordon jobber in a corner of the baggage car. The train consisted of eight brand-new Pullmans, including a dining car and a barber shop—a barber shop in the days when a citizen's standing in the community was estimated by the length of his whiskers! A bound file of "The Transcontinental" was offered in an auction at the Anderson Galleries, New York, April 4, 1927. The only other volume which I can trace was auctioned at the American Art Galleries in 1923.

CHARLES FREDERICK CARTER.

Auto Tourists Use Railway

Starting Saturday, June 23, when the flooded White river put the Little Rock-Bald Knob-Memphis highway out of commission, at the request of the Arkansas state highway department, the Missouri Pacific put on a shuttle train service for automobile tourists. This service operates between Bald Knob, Ark., and Wynne, 45 miles, making two or three round trips daily. Flat cars are used to transport the automobiles, ramps being provided at each terminal, so that the automobiles may be run on and off the cars under their own power. Coaches are provided for handling the automobilists. Up to July 1, 523 automobiles and 1,181 passengers were handled by the shuttle trains. A special rate of $7 per automobile was authorized by the state commission, while the passengers pay the regular fare. For nine days, including July 1, the revenue from this service amounted to $6,263, while the expenses were about $1,700. The Missouri Pacific has received many compliments on this service and it will be continued as long as the necessity exists.

Mess Call

When the whistle of the Green Mountain Flyer splits the quiet air of Ludlow, Vt., each afternoon, Jerry, the best-known public canine character in Ludlow, knows he has a business appointment. The business of Jerry, an Airedale, is enjoying life. Day after day for the last five years Jerry has met the Boston-Montreal express at the Ludlow station. The regular passengers have learned to look for him. The diner chef always has a choice bone for Jerry. By dint of hard fighting Jerry has maintained his concession exclusively. Other dogs have tried to intrude, but have failed sadly. Jerry will brook no trespass in the neighborhood of the station by any other dog while awaiting the approach of the afternoon express. The home of his owner overlooks the station. Perched on the piazza, Jerry listens each afternoon for the familiar whistle. And Jerry knows his whistles. Other trains he will not so much as notice. In five years he has never missed the train, except during two weeks when under a doctor's care for an injury he suffered in jumping to greet the diner crew before the train had stopped.

"Six Days Shalt Thou Labor—"

On any other day but Sunday, and perhaps holidays, the Minnesota Railroad and Warehouse Commission has a weather eye out for the welfare of the railroads of that state, exercising its jurisdiction in a most paternal manner. It grants them permission to reduce their intrastate rates, to take up unused tracks in yards, to abandon wayside stations, to continue the operation of unprofitable passenger trains and protects them from ambitious towns that would open a street across the railroad at every block. In short, for any day but Sunday the Commission functions for all the world like the other 46 state bodies that father the railroads. But for one day a week the railroads are without protection. On June 20, for "lack of jurisdiction," the Commission dismissed the application of the Chicago, Milwaukee, St. Paul & Pacific for permission to discontinue the operation of one passenger train each way between Minneapolis and Austin on Sunday. This left the railway in somewhat of a quandary. However, a Minnesota court had previously held that "the compulsion of Sunday labor and of the operation of Sunday local passenger trains is contrary to the legislative policy of the state." In view of this and since no one, apparently, has jurisdiction, the local train no longer runs to and from Austin on Sundays.

Long Divisions

A reader has raised a question regarding the operating divisions with the greatest route mileage on railways in the United States and Canada, volunteering the information that the Dakota division of the Great Northern contains 1,817 route miles. Route mileage, we might explain, does not take into account additional main or yard tracks and refers only to the distance between the various termini on any particular division. The Idaho division of the Oregon Short Line has a route mileage of 1,300 and the Portland division of the Southern Pacific comprises 1,244 route miles. The Southern Pacific has two other divisions of exceptional length, the Salt Lake with 1,165 route miles, and the Rio Grande with 1,136 route miles. In Canada the Portage division of the Canadian National has a route mileage of 1,141, the Belleville division of the same railroad has a route mileage of 1,099 and the Saskatoon division of the Canadian Pacific has a route mileage of 1,083. The Willmar division of the Great Northern extends over 1,021 route miles. Among other divisions with route mileages above the average are: Canadian National, Port Arthur, 996; Edmonton, 985; Regina, 937; Calgary, 865; Stratford, 799; Cochrane, 711; Canadian Pacific, Medicine Hat, 972; Regina, 834; Oregon-Washington Railroad & Navigation Company, Third division, 930; First division, 797; Atchison, Topeka & Santa Fe, Albuquerque, 777; Chicago, Rock Island & Pacific, El Paso-Amarillo, 857. The longest divisions on other railroads are: Northern Pacific, 962; Union Pacific, 878; Chicago, Burlington & Quincy, 843.

NEWS *of the* WEEK

Southern Pacific Trains on Mississippi Car Ferry.—Galloway Photo.

THE AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS will hold its twenty-third annual meeting at French Lick, Ind., on September 22.

THE RAILWAY FIRE PROTECTION ASSOCIATION announces that its annual meeting is to be held, not at Washington, but at Cincinnati, Ohio—Hotel Gibson. The meeting is scheduled for Tuesday, Wednesday and Thursday, October 9, 10, 11.

THE WESTERN UNION TELEGRAPH COMPANY has entered into a contract to run for 25 years, with the Louisville & Nashville for the operation of commercial telegraph business throughout the lines and station offices of the railroad company.

THE NEW YORK CENTRAL now has automatic train control in operation throughout its main line from Chicago to Croton, N. Y.; that is to say, the whole of the main line, except from Croton, southward to New York City, 34 miles, which is electrified and on which installation of apparatus is not yet completed.

TRACKMEN and other M. W. employees of the Pennsylvania, to the number of 22,000, are to be granted increases of pay ranging from one cent an hour to seventeen dollars a month. This statement is issued as coming from Calvin W. Long, chairman of the board representing the employees, and is said to be based on the decision of a conference between officers of the road and representatives of the men held at Harrisburg, ending August 1. Officers of the company have no statement to make.

DENIAL of the report that the Railway Labor Executive Association favored any one political party was contained in a statement issued by D. B. Robertson, president, on August 6. His statement follows:

"In an interview published August 5, Senator Pittman of Nevada has misinterpreted the attitude of the Railway Labor Executives towards the Presidential campaign as indicating a favorable disposition toward the candidacy of Governor Smith. Our association met in Washington last week and decided that the association itself would not endorse any Presidential candidate but that each executive would be left free to support whomever he favored. This action did not indicate that a majority favored the election of either Hoover or Smith. At the same time certain Senators and Representatives were endorsed strictly on their labor records with no consideration whatsoever for their party label or party Presidential candidates. In all these actions I participated both as chairman of the association, and as president of the Brotherhood of Locomotive Firemen and Enginemen. Naturally, I object to any statements that these actions indicated any approval of the Smith campaign because I intend to support Secretary Hoover for President and to do all that I can to aid in his election. Neither the Association of Railway Labor Executives nor their joint publication, Labor, will advocate the election of either Hoover or Smith, or attempt to express the opinions of the individual organizations, or their memberships, on the Presidential issue."

Depreciation Accounting Order Postponed

The Interstate Commerce Commission has postponed indefinitely the effective date of its orders of November 2, 1926, prescribing a system of depreciation accounting for steam railroad and telephone companies.

Rock Island Locomotive Makes Long Run

An unusual run of 1,102 miles with one coal-burning locomotive was made recently by locomotive No. 4002 of the Chicago, Rock Island & Pacific. It was in hauling the Colorado express from Chicago to Limon, Colo., and return to Goodland, Kan. No repairs to the locomotive were required during the run and the entire trip was made without cleaning the fire. The locomotive was not given any special treatment at Chicago before being placed on the run.

Joint Car Officers' Meeting At St. Louis

A joint convention of the Railway Car Department Officers Association and the Southwest Master Car Builders and Supervisors Association will be held at the Hotel Statler, St. Louis, Mo., September 11, 12 and 13. The joint convention, to which all interested railway officers and car department supervisors are invited, will be held in place of the separate annual conventions of the two organizations which had previously been scheduled for September 11 to 13 at St. Louis, and August 4 to 6 at Galveston, Tex., respectively.

Frisco Clerks Receive Advance In Pay

An increase, averaging 3.07 cents an hour, has been granted to clerks and station employees of the St. Louis-San Francisco to the number of about 3,600; this by decision of a board of arbitration which has held hearings in St. Louis, Mo. The increase dates from August 2. The employees—members of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees—had asked for ten cents an hour. The neutral members of the arbitration board were former Judge Fred L. Williams of St. Louis and former Congressman J. L. Kennedy of Omaha.

Huntington (W. Va.) Waterway Traffic Survey

The Transportation division of the Department of Commerce has completed a survey of potential tonnage available for transportation by water, and by rail-and-water to and from Huntington, W. Va., on the Ohio river. This survey was made at the request of the Chamber of Commerce of Huntington. The survey shows that there is a potential tonnage of 337,984 of inbound traffic and 162,852 of outbound traffic, or a total of 500,836 tons annually. The present water borne tonnage is negligible. Says the Department of Commerce:

"The Chamber of Commerce of Huntington has had under consideration the problem of attracting industries to Huntington and concluded that a cheap transportation medium for bulk raw materials would attract industries. This particular survey was made to enable Huntington to ascertain just the type of terminal that should be built to accommodate prospective cargo movement."

Illinois Central Derailment

Southbound passenger train No. 3, on the Illinois Central, was derailed at 3:10

(Continued on Page 282)

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1928

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Akron, Canton & Youngstown	June	171	$268,986	$240	$279,058	$52,310	$30,527	$12,919	$69,908	$14,125	$179,789	64.4	$99,269	$86,518	$61,820	$52,216
	6 mos.	171	1,539,274	1,372	1,603,591	301,960	165,453	76,344	449,239	86,205	1,078,040	67.2	525,551	445,789	289,283	246,530
Atchison, Topeka & Santa Fe	June	9,430	10,643,580	3,489,707	15,579,958	3,609,942	3,245,228	413,547	4,864,851	410,590	12,469,133	80.0	3,110,825	2,015,499	1,891,619	2,681,493
	6 mos.	9,427	65,530,146	17,801,286	91,508,763	18,555,318	19,624,261	2,463,304	28,773,675	2,481,390	71,625,305	78.3	19,883,458	12,848,406	12,826,615	18,073,909
Gulf, Colorado & Santa Fe	June	1,944	1,579,902	220,691	1,932,658	393,224	469,094	57,521	698,846	68,673	1,663,631	86.1	269,027	177,106	15,052	171,655
	6 mos.	1,944	10,475,640	1,121,446	12,391,427	2,662,083	2,900,054	343,327	4,383,399	428,802	10,559,115	85.2	1,832,312	1,275,291	423,192	1,713,053
Panhandle & Santa Fe	June	964	655,998	112,272	846,433	326,124	200,450	11,627	286,538	26,066	838,917	99.1	7,516	—28,195	—122,532	71,944
	6 mos.	964	4,547,167	630,794	5,619,448	1,687,144	1,326,733	69,364	1,846,149	157,608	4,908,322	87.4	711,126	499,055	—17,006	883,829
Atlanta & West Point	June	93	149,002	58,557	236,729	29,319	49,220	11,883	90,309	12,417	197,669	83.5	39,060	25,834	12,444	14,635
	6 mos.	93	971,292	346,349	1,510,558	172,497	265,257	74,630	544,065	78,481	1,162,566	77.0	347,992	255,422	161,805	141,683
Western of Alabama	June	133	177,190	57,268	257,742	41,619	50,560	11,917	85,545	13,049	206,624	80.2	51,118	32,213	35,466	19,363
	6 mos.	133	1,123,185	336,165	1,617,915	202,376	301,290	74,277	469,753	86,673	1,156,695	71.5	461,220	339,075	431,530	228,048
Atlanta, Birmingham & Coast	June	639	275,849	29,604	343,476	78,007	80,032	29,969	149,938	19,522	368,135	107.2	—24,659	—39,691	—49,808	—27,440
	6 mos.	639	1,900,548	158,867	2,306,767	528,934	483,245	175,317	951,514	112,409	2,312,785	100.3	—6,018	—96,506	—181,342	—86,303
Atlantic Coast Line	June	5,115	4,128,934	861,979	5,442,453	917,872	1,267,996	176,603	2,026,487	169,205	4,590,630	84.3	851,823	449,799	353,143	270,218
	6 mos.	5,106	28,079,816	8,188,576	39,549,339	5,778,910	7,693,031	1,094,828	13,517,682	1,075,184	29,549,751	74.7	9,999,588	6,937,592	6,437,114	8,441,464
Charleston & Western Carolina	June	342	251,675	13,011	273,379	47,191	81,399	8,266	90,515	7,196	234,211	85.7	39,168	17,664	15,929	37,762
	6 mos.	342	1,568,675	75,287	1,703,181	372,074	298,626	44,045	605,620	42,903	1,361,834	80.0	341,347	212,058	192,246	247,120
Baltimore & Ohio	June	5,637	16,155,878	2,227,839	19,833,416	2,375,219	3,906,843	508,790	6,692,506	675,018	14,359,080	72.4	5,474,336	4,543,083	4,293,969	5,249,592
	6 mos.	5,637	92,266,200	11,668,749	111,231,256	14,252,302	23,978,377	2,976,080	40,369,027	4,047,143	86,710,484	78.0	24,520,772	19,186,583	17,712,360	22,555,870
Baltimore & Ohio Chicago Term.	June	87	.....	.....	377,533	50,526	42,822	2,794	184,450	16,323	297,943	78.9	79,590	17,900	103,626	83,578
	6 mos.	87	.....	.....	2,130,810	222,606	251,051	14,925	1,094,082	96,116	1,693,722	79.5	437,088	84,473	616,211	528,996
Staten Island Rapid Transit	June	23	116,097	134,319	286,707	41,796	17,160	2,014	111,043	19,760	191,773	66.9	94,934	74,401	38,025	43,731
	6 mos.	23	654,167	704,673	1,517,120	206,856	122,060	13,279	643,055	100,004	1,085,254	71.5	431,866	308,324	86,194	55,256
Bangor & Aroostook	June	613	354,171	36,536	417,057	109,775	96,715	5,492	123,019	24,026	362,472	86.9	54,585	40,539	67,671	24,426
	6 mos.	613	3,504,443	387,426	4,042,334	661,354	671,940	33,698	969,997	148,121	2,503,760	61.9	1,538,574	1,211,222	1,266,627	1,372,977
Belt. Ry. Co. of Chicago	June	32	.....	.....	637,081	80,632	63,297	4,015	280,993	10,141	439,078	68.9	198,003	138,687	148,844	146,614
	6 mos.	32	.....	.....	3,893,702	360,794	406,430	23,158	1,847,269	67,389	2,705,040	69.5	1,188,662	879,340	870,599	843,184
Bessemer & Lake Erie	June	224	1,984,018	8,453	2,012,283	163,951	334,075	14,235	371,017	29,677	915,189	45.5	1,097,094	998,337	960,458	441,386
	6 mos.	225	5,914,150	59,791	6,080,174	684,750	1,849,309	88,832	1,673,586	203,947	4,520,249	74.3	1,559,925	1,301,880	1,325,907	1,521,672
Bingham & Garfield	June	33	38,361	.....	39,411	11,108	9,811	1,360	10,056	5,210	37,662	95.6	1,749	—4,647	11,462	20,628
	6 mos.	33	227,806	.....	234,380	52,889	52,160	8,522	63,082	27,105	204,485	87.2	29,895	—13,550	86,438	111,304
Boston & Maine	June	2,112	4,021,842	1,324,078	6,179,836	1,121,395	985,153	95,903	2,208,291	216,847	4,643,697	75.1	1,536,139	1,240,822	1,037,893	1,016,945
	6 mos.	2,112	24,265,383	7,989,940	36,588,620	5,243,354	6,487,512	481,546	13,835,467	1,369,200	27,502,239	75.2	9,086,381	7,306,799	6,126,158	5,521,532
Brooklyn Eastern Dist. Terminal	June	9	119,750	.....	124,570	7,068	12,007	359	45,203	7,200	71,837	57.7	52,733	44,168	44,168	42,362
	6 mos.	9	724,895	.....	750,968	58,701	71,617	3,439	266,785	47,028	447,570	59.6	303,398	251,811	251,811	230,917
Buffalo & Susquehanna	June	253	112,118	999	121,965	28,281	35,675	2,610	36,828	7,418	110,812	90.9	11,153	9,153	19,884	16,142
	6 mos.	253	729,875	8,035	780,157	161,501	266,013	11,708	250,693	45,893	735,808	94.3	44,349	32,349	101,681	88,256
Buffalo, Rochester & Pittsburgh	June	601	1,275,374	72,068	1,402,109	193,427	343,502	31,831	524,044	40,349	1,135,708	81.0	266,401	216,395	230,511	67,178
	6 mos.	601	7,595,237	448,262	8,311,420	862,799	2,119,499	178,719	3,219,776	243,536	6,638,141	79.9	1,673,279	1,453,161	1,467,574	947,943
Canadian Pacific Lines in Maine	June	233	84,504	30,176	128,194	55,736	23,777	6,000	67,613	6,619	159,745	124.6	—31,551	—45,551	—67,364	—84,690
	6 mos.	233	1,182,072	184,032	1,451,521	327,979	260,083	33,758	619,753	25,603	1,267,176	87.3	184,345	100,345	—51,547	—55,935
Canadian Pacific Lines in Vermont	June	85	100,553	42,638	164,405	89,590	30,228	1,783	93,835	1,746	217,182	132.1	—52,777	—57,627	—91,887	4,886
	6 mos.	85	654,110	218,468	992,923	396,032	234,901	10,232	616,886	11,573	1,269,624	127.9	—276,701	—305,801	—507,888	—43,680
Central of Georgia	June	1,911	1,395,856	306,552	1,874,316	260,004	383,428	76,451	761,851	94,574	1,590,689	84.9	283,627	167,739	191,623	262,734
	6 mos.	1,911	9,304,316	1,983,923	12,522,898	1,599,783	2,241,319	433,436	4,835,692	569,863	9,754,591	77.9	2,768,307	2,004,665	1,983,826	2,348,799
Central New Jersey	June	690	3,667,691	733,877	4,702,754	498,631	1,052,135	55,276	1,776,859	124,187	3,529,925	75.1	1,172,829	672,516	585,881	959,324
	6 mos.	690	21,960,123	3,932,210	27,638,959	2,626,225	5,887,884	294,831	10,682,248	813,461	20,449,843	74.0	7,189,116	4,926,115	4,207,444	4,270,599
Central Vermont	June	398	542,545	94,414	706,404	394,538	105,759	18,139	281,190	21,688	821,736	116.33	—115,332	—131,557	—159,387	118,957
	6 mos.	385	2,409,182	250,610	3,003,067	2,156,880	626,309	84,562	1,465,677	132,745	4,466,582	148.73	—1,463,515	—1,543,643	—1,639,263	376,750
Chesapeake & Ohio	June	2,723	9,064,943	645,661	10,114,644	1,392,247	2,363,610	134,420	2,575,048	278,939	6,773,457	67.0	3,341,187	2,721,666	2,956,986	3,011,508
	6 mos.	2,719	53,725,352	3,525,468	59,652,434	8,643,613	14,518,740	786,701	16,337,077	1,667,196	42,127,617	70.6	17,524,817	13,555,658	14,745,477	17,958,138
Chicago & Alton	June	1,028	1,615,305	495,521	2,339,916	373,997	491,631	92,327	839,785	68,404	1,877,063	80.2	462,853	356,827	173,379	269,514
	6 mos.	1,028	9,461,124	2,788,071	13,570,821	1,631,647	3,079,869	488,718	5,237,221	480,244	11,004,551	81.1	2,566,270	1,932,135	841,669	1,323,348
Chicago & Eastern Illinois	June	945	1,446,617	307,693	1,921,126	274,773	330,238	83,197	738,977	67,536	1,508,469	78.5	412,657	292,279	138,673	134,461
	6 mos.	945	9,047,466	1,720,340	11,744,100	1,500,889	2,546,882	500,342	4,803,676	408,215	9,848,137	83.9	1,895,963	1,188,423	354,629	969,294
Chicago & Illinois Midland	June	133	195,890	5,586	205,049	45,152	46,351	14,284	58,406	18,678	182,798	89.2	22,251	15,816	22,912	—134,235
	6 mos.	133	1,174,299	46,818	1,252,665	186,913	257,418	89,033	370,851	95,362	998,384	79.7	254,281	212,671	216,363	—199,506
Chicago & North Western	June	8,463	9,946,584	2,381,122	13,862,005	2,069,367	2,338,029	349,219	4,603,976	370,737	9,776,021	70.5	4,085,984	3,310,127	3,068,197	2,853,191
	6 mos.	8,463	52,164,690	11,411,229	71,261,134	10,223,798	14,430,598	1,445,437	27,993,733	2,192,879	56,558,833	79.4	14,702,301	10,042,037	9,054,094	8,432,843
Chicago, Burlington & Quincy	June	9,374	8,776,629	1,826,258	12,052,155	2,541,547	2,104,640	337,514	4,129,595	383,843	9,530,820	79.1	2,521,335	1,773,511	1,373,812	1,596,770
	6 mos.	9,376	58,198,301	9,143,058	75,109,581	11,282,977	12,978,691	1,680,241	25,918,171	2,219,440	54,484,287	72.5	20,625,294	15,380,179	13,290,172	11,772,681

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Chicago & North Western	June	8,463			71,261,134											
	6 mos.	8,463	52,164,690	11,411,229		10,223,798	2,104,640	1,680,241	25,918,171							
Chicago, Burlington & Quincy	June	9,374				2,541,547	12,978,691									
	6 mos.	9,376	58,198,301	9,143,058	75,109,581	11,282,977										
Chicago Great Western	June	1,495	$1,624,638	$262,637	$2,052,081	$344,601	$361,102	$90,299	$779,153	$58,794	$1,647,735	80.3	$404,346	$325,362	$166,248	$103,638
	6 mos.	1,495	9,290,969	1,440,770	11,670,165	1,492,393	2,211,164	492,379	4,872,986	341,527	9,482,632	81.3	2,187,533	1,698,680	780,627	623,124
Chicago, Indianapolis & Louisville	June	647	1,124,898	182,475	1,464,449	153,481	293,976	40,884	522,731	34,941	1,056,505	72.1	407,944	321,995	205,100	235,665
	6 mos.	647	7,013,597	1,115,138	8,999,114	823,200	1,869,059	241,244	3,366,834	217,060	6,603,015	73.4	2,396,099	1,918,828	1,168,126	1,312,083
Chicago, Milwaukee, St. Paul & Pac.	June	11,250	10,886,945	1,819,172	14,131,518	3,404,597	2,386,519	404,492	4,701,837	372,300	11,362,664	80.4	2,768,854	1,948,760	1,510,839	562,523
	6 mos.	11,251	63,248,928	8,797,745	79,384,200	12,252,681	15,061,275	1,731,439	28,598,311	2,154,803	60,269,885	75.9	19,114,315	14,316,615	11,770,176	3,808,103
Chicago River & Indiana	June	20	.....	.....	548,788	67,417	59,030	852	201,075	33,240	361,614	65.9	187,174	155,255	248,833	264,306
	6 mos.	20	.....	.....	3,386,480	345,696	386,331	4,729	1,257,746	126,891	2,121,393	62.6	1,265,087	1,026,292	1,610,131	1,560,673
Chicago, Rock Island & Pacific	June	7,565	8,222,451	1,673,594	10,875,316	1,560,299	2,149,972	255,657	3,822,489	329,144	8,135,163	74.8	2,740,153	2,068,455	1,603,878	1,511,760
	6 mos.	7,567	47,467,290	9,420,541	62,498,669	8,480,964	12,624,835	1,437,701	23,197,960	2,009,083	47,748,110	76.4	14,750,559	10,896,843	8,488,616	7,835,291
Chicago, Rock Island & Gulf	June	516	365,529	55,905	470,988	64,017	67,723	24,013	215,659	17,062	391,768	83.2	79,220	54,689	24,791	31,153
	6 mos.	516	2,418,492	386,488	3,072,593	398,192	358,197	121,827	1,185,949	101,707	2,151,946	70.0	920,647	760,176	589,048	785,607
Chic., St. Paul, Minn. & Omaha	June	1,746	1,559,904	389,706	2,137,357	525,194	391,830	43,056	890,518	76,900	1,934,588	90.5	202,769	85,294	37,632	351,097
	6 mos.	1,746	9,654,182	2,031,230	12,674,860	1,990,289	2,534,929	241,370	5,612,340	459,776	10,881,846	85.9	1,793,014	1,118,332	797,156	1,186,461
Clinchfield Railroad	June	309	499,260	15,412	525,476	69,958	140,231	23,293	113,296	17,268	363,579	69.2	161,897	96,896	171,734	256,869
	6 mos.	309	3,254,673	98,911	3,424,929	384,731	788,054	134,940	745,422	106,165	2,157,819	63.0	1,267,110	826,807	1,306,470	1,731,342
Colorado & Southern	June	1,035	670,963	98,342	854,359	220,163	204,233	15,052	315,662	42,781	802,190	93.9	52,169	—12,008	—23,212	—51,152
	6 mos.	1,046	4,493,639	531,139	5,512,525	1,117,320	1,189,893	89,081	2,029,644	251,528	4,687,392	85.0	825,133	429,248	356,285	296,111
Ft. Worth & Denver City	June	632	553,881	153,197	767,942	133,924	146,258	30,878	269,739	37,263	617,852	80.5	150,090	122,917	129,084	75,029
	6 mos.	550	3,815,734	905,477	5,117,065	874,049	823,960	123,812	1,610,498	226,003	3,645,174	71.2	1,471,891	1,234,763	1,248,055	1,163,560
Wichita Valley	June	271	81,269	12,480	100,954	47,306	7,465	7	38,770	1,769	94,569	93.7	6,385	30,478	32,412	3,395
	6 mos.	271	726,454	76,680	848,803	177,239	47,577	128	250,130	10,191	480,049	56.6	368,754	15,644	19,074	—50,364
Columbus & Greenville	June	167	91,451	17,268	115,202	46,206	16,730	3,904	45,222	10,347	122,341	106.2	—7,139	289,524	315,677	501,205
	6 mos.	167	663,165	110,271	814,736	246,369	104,186	23,200	295,734	70,543	740,088	90.8	74,648	2,675,258	2,628,071	2,429,024
Conemaugh & Black Lick	June	22	94,853	.....	159,649	13,799	29,573	992	79,905	3,902	128,171	80.3	31,478	30,478	32,412	—59,740
	6 mos.	22	390,061	.....	772,353	77,087	170,742	5,578	476,853	20,449	750,709	97.2	21,644	15,644	19,074	63,125
Delaware & Hudson	June	881	2,546,140	249,030	3,059,133	364,818	715,961	53,765	1,106,261	159,579	2,418,156	79.0	640,977	289,524	315,677	36,583
	6 mos.	881	16,005,372	1,516,498	18,944,614	2,413,743	4,590,104	314,753	7,106,240	973,683	15,478,385	81.7	3,466,229	2,675,258	2,628,071	2,429,024
Delaware, Lackawanna & Western	June	998	4,905,920	1,023,973	6,745,910	799,684	1,086,185	153,687	2,536,592	184,399	4,810,007	71.3	1,935,903	1,367,998	1,395,654	1,797,098
	6 mos.	998	28,915,386	5,662,225	39,183,295	4,269,008	6,853,475	829,067	15,848,031	1,097,301	29,206,166	74.5	9,977,129	6,759,599	6,943,475	7,545,001
Denver & Rio Grande Western	June	2,562	1,834,826	362,290	2,416,380	585,363	502,084	60,256	689,490	87,298	1,953,924	80.9	462,456	277,325	354,682	366,563
	6 mos.	2,552	11,924,421	1,589,294	14,601,189	3,047,967	3,054,203	345,966	4,420,349	521,854	11,533,475	79.0	3,067,714	1,956,989	2,360,138	2,275,980
Denver & Salt Lake	June	232	204,946	21,379	241,173	89,118	65,421	2,891	39,226	8,149	202,340	83.9	38,833	28,833	38,671	—59,740
	6 mos.	239	1,583,054	145,250	1,815,129	354,297	475,348	11,600	357,347	53,989	1,248,338	68.8	566,791	518,761	557,153	63,125
Detroit & Mackinac	June	300	130,419	10,786	154,450	52,944	25,181	2,123	43,279	5,443	121,996	79.0	32,454	22,040	26,399	36,583
	6 mos.	300	627,515	72,404	757,893	196,576	150,816	12,086	259,909	34,031	642,399	84.8	115,494	47,362	69,451	112,767
Detroit & Toledo Shore Line	June	50	354,664	.....	360,067	51,927	34,850	10,237	94,218	13,965	205,197	57.0	154,870	123,192	54,866	78,416
	6 mos.	50	2,417,856	.....	2,446,212	242,692	215,692	28,031	622,434	53,166	1,162,015	47.5	1,284,197	1,099,601	626,021	665,212
Detroit Terminal	June	19	.....	.....	200,496	19,970	16,260	.....	126,378	3,675	205,197	63.0	74,118	54,748	57,245	38,054
	6 mos.	19	.....	.....	1,078,243	98,984	83,830	30	683,590	22,559	1,162,015	63.4	394,653	285,782	295,080	289,492
Detroit, Toledo & Ironton	June	495	792,069	3,865	813,050	137,704	178,461	13,401	246,466	27,437	560,189	68.9	252,861	194,517	136,850	—2,359
	6 mos.	495	4,621,331	21,480	4,725,265	650,888	1,008,199	75,250	1,529,501	172,346	3,332,928	70.5	1,392,337	1,082,594	717,424	563,733
Duluth & Iron Range	June	275	944,404	3,553	1,080,314	158,811	105,485	1,768	207,741	24,247	497,955	46.1	582,359	515,709	516,377	492,787
	6 mos.	275	1,882,679	27,168	2,181,639	536,623	639,613	10,365	730,628	125,175	2,042,307	93.6	139,332	—46,945	—42,348	176,567
Duluth, Missabe & Northern	June	308	2,483,362	3,986	2,815,507	187,814	178,461	3,152	379,057	22,969	771,451	27.4	2,044,056	1,815,853	1,806,238	1,538,635
	6 mos.	307	4,528,010	29,516	5,175,924	785,529	1,008,199	18,354	1,207,670	133,770	3,153,504	60.9	2,022,420	1,236,178	1,218,296	1,543,252
Duluth, Winnipeg & Pacific	June	178	177,247	15,423	205,504	64,018	53,198	5,122	67,609	7,028	200,537	97.6	4,967	—5,693	—846	134
	6 mos.	178	1,177,223	69,913	1,288,918	220,499	286,580	28,552	446,574	47,194	1,038,341	80.5	250,577	184,710	154,888	161,456
Elgin, Joliet & Eastern	June	460	1,841,039	33	2,031,641	239,146	415,650	14,863	671,852	52,145	1,392,982	68.6	638,659	512,807	360,166	348,060
	6 mos.	460	11,601,286	77	12,767,524	1,193,694	2,546,980	90,136	4,378,345	336,581	8,539,304	66.9	4,228,220	3,519,577	2,503,107	2,939,484
Erie Railroad	June	2,047	7,159,434	936,275	8,858,472	1,207,417	2,108,154	186,920	3,383,763	292,740	7,215,048	81.4	1,643,424	1,284,455	1,283,635	1,375,627
	6 mos.	2,047	42,650,145	5,072,388	51,964,187	6,209,376	12,121,277	1,027,000	20,748,665	1,744,399	42,097,629	81.0	9,866,558	7,701,190	7,365,021	6,031,632
Chicago & Erie	June	269	1,076,352	59,355	1,239,089	182,958	143,508	26,012	328,099	40,313	719,725	58.1	519,364	460,792	166,960	—25,352
	6 mos.	269	6,306,382	267,566	7,117,648	967,593	941,664	150,098	2,148,524	243,424	4,447,797	62.5	2,669,851	2,353,010	612,515	148,973
New Jersey & New York	June	45	24,099	100,813	130,134	19,475	17,695	1,971	68,153	3,731	111,025	85.3	19,109	15,206	—20,646	—25,230
	6 mos.	45	179,857	566,322	774,810	105,544	142,543	10,026	426,916	21,254	706,199	91.1	68,611	45,146	—153,152	—159,940
N. Y., Susquehanna & Western	June	134	297,085	45,792	382,166	58,808	63,467	5,998	194,265	11,054	333,441	87.3	48,725	19,371	—5,126	41,476
	6 mos.	134	1,903,291	262,402	2,414,117	313,414	371,020	31,144	1,160,818	67,322	1,943,331	80.5	470,786	294,626	126,634	59,528
Evansville, Indianap. & Terre Haute	June	146	108,991	3,503	117,361	29,392	16,306	2,295	57,356	6,404	111,753	95.2	5,608	3,061	—25,127	20,858
	6 mos.	146	869,165	24,236	925,949	141,034	144,741	13,758	354,293	36,011	689,753	74.5	236,196	208,504	20,059	102,264
Florida East Coast	June	855	638,365	230,473	979,443	159,480	147,960	30,000	293,163	49,052	684,763	69.9	294,680	146,275	25,644	—59,396
	6 mos.	857	4,908,522	3,060,987	8,973,573	1,138,005	1,197,398	229,193	2,596,512	291,961	5,619,745	62.6	3,353,828	2,451,573	1,951,813	1,506,491

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income	Net ry. operating income, 1927.
Fort Smith & Western	June	249	$94,947	$8,907	$110,187	$26,424	$25,829	$6,345	$39,160	$6,853	$103,960	94.35	$6,227	$3,202	—$11,328	—$12,256
	6 mos.	249	591,847	56,543	687,489	139,193	163,072	36,060	256,040	41,119	630,664	91.74	56,825	35,473	—40,406	—8,545
Galveston Wharf	June	13	.....	.....	257,299	42,273	4,839	4,462	25,052	5,045	90,389	35.1	166,910	116,910	116,929	—3,545
	6 mos.	13	.....	.....	962,332	272,934	27,000	18,316	160,489	29,478	559,442	58.1	402,890	267,890	268,730	253,277
Georgia R. R.	June	328	313,636	59,125	403,081	50,483	87,371	22,199	176,627	22,047	358,446	88.9	44,635	36,084	57,576	64,617
	6 mos.	328	2,006,078	343,195	2,533,955	270,308	507,093	139,822	1,135,381	139,919	2,190,618	86.5	343,337	288,489	367,334	456,060
Georgia & Florida	June	445	98,101	11,205	116,854	19,361	18,881	8,457	47,671	8,149	101,936	87.2	14,918	5,593	9,384	7,769
	6 mos.	445	639,849	72,731	760,447	113,992	114,538	54,179	309,127	49,782	641,259	84.3	119,188	66,834	78,828	111,423
Grand Trunk Western	June	345	1,643,361	213,737	1,941,080	301,556	370,340	46,269	616,928	62,434	1,400,372	72.1	540,708	449,387	317,296	242,722
	6 mos.	345	9,246,243	1,000,765	10,757,010	1,209,078	2,316,860	257,579	3,736,502	390,776	7,975,297	74.1	2,781,713	2,264,553	1,658,926	1,572,915
Atlantic & St. Lawrence	June	166	149,879	24,397	194,423	90,707	—5,236	6,288	96,414	7,961	197,657	101.6	—3,234	—18,134	—80,832	—67,731
	6 mos.	166	1,006,057	169,744	1,295,443	379,668	212,119	34,928	793,157	51,319	1,480,233	114.2	—184,790	—272,261	—674,621	—326,405
Chic., Det. & Canada Gr. Tr. Jct.	June	59	309,499	737	355,779	12,906	15,368	5,116	90,167	3,853	127,410	35.8	228,369	218,019	191,078	88,919
	6 mos.	59	1,703,009	6,592	1,935,646	76,368	96,872	28,741	567,619	24,902	794,473	41.0	1,141,173	1,079,062	892,129	704,618
Detroit, Grand Haven & Mil.	June	192	672,279	22,954	743,164	98,917	64,211	14,514	282,208	19,297	479,029	64.5	264,135	255,285	126,722	171,862
	6 mos.	192	4,025,472	152,736	4,495,770	573,645	380,963	81,193	1,663,863	114,986	2,813,612	62.6	1,682,158	1,628,950	930,805	870,850
Great Northern	June	8,311	8,002,255	1,044,013	10,164,659	1,900,968	1,587,392	286,418	2,971,733	228,636	7,059,375	69.5	3,105,284	2,350,759	2,336,125	2,316,054
	6 mos.	8,208	39,740,061	5,366,726	49,967,483	7,681,496	9,417,621	1,497,886	17,837,348	1,443,744	38,234,058	76.5	11,733,425	7,559,664	7,442,221	7,032,835
Green Bay & Western	June	234	128,566	4,305	136,521	28,131	21,390	5,097	49,377	2,644	106,639	78.1	29,882	21,882	15,213	—354
	6 mos.	234	770,046	34,217	843,570	128,455	113,487	31,412	325,110	16,776	615,238	72.9	228,332	180,168	149,297	112,775
Gulf & Ship Island	June	307	164,671	33,249	215,587	78,281	54,211	5,426	92,936	7,869	242,002	112.3	—26,415	—52,716	—66,995	—57,635
	6 mos.	307	1,349,118	234,916	1,729,190	369,893	325,108	31,864	621,709	50,268	1,420,214	82.1	308,976	148,828	53,906	—271,721
Gulf, Mobile & Northern	June	733	488,656	27,557	541,948	115,439	88,540	32,689	173,961	28,373	439,332	81.07	102,616	79,761	52,585	44,754
	6 mos.	733	3,271,072	181,466	3,599,548	652,915	560,681	191,643	1,123,294	170,118	2,700,163	75.01	899,385	720,537	512,199	550,248
Hocking Valley	June	348	1,621,837	62,710	1,891,584	196,739	339,802	16,455	514,252	45,344	1,112,588	58.8	778,996	665,454	553,756	626,778
	6 mos.	348	7,967,298	354,639	9,078,574	1,078,344	1,966,655	100,972	2,737,487	280,571	6,163,873	67.9	2,914,701	2,187,456	1,879,486	2,557,841
Illinois Central	June	5,058	9,258,617	1,813,117	11,942,924	1,758,629	3,267,825	268,942	4,299,901	357,488	10,033,244	84.0	1,909,680	1,265,830	1,279,300	2,224,828
	6 mos.	4,958	58,066,853	11,048,431	75,013,944	9,009,299	17,859,398	1,578,977	27,291,374	2,152,650	58,391,019	77.8	16,622,925	11,721,242	11,777,084	12,991,178
Yazoo & Mississippi Valley	June	1,709	1,421,000	284,399	1,830,690	433,652	367,344	47,981	774,156	64,750	1,695,187	92.6	135,503	—71,048	—92,658	—189,555
	6 mos.	1,709	9,967,419	1,680,104	12,459,675	2,314,255	2,505,941	274,524	4,959,403	388,739	10,471,774	84.0	1,987,901	993,012	563,368	405,535
Illinois Central System	June	6,768	10,689,341	2,101,532	13,787,357	2,192,281	3,641,141	316,923	5,084,142	422,395	11,744,645	85.2	2,042,712	1,227,776	1,190,326	2,037,093
	6 mos.	6,667	68,099,538	12,751,110	87,561,476	11,323,554	20,405,142	1,853,501	32,329,168	2,542,175	68,981,773	78.8	18,579,703	12,655,511	12,349,266	13,425,596
Kansas City, Mexico & Orient	June	272	216,431	7,397	233,234	72,780	50,138	9,177	68,386	9,522	209,982	90.0	23,252	19,127	30,944	2,342
	6 mos.	272	1,435,244	34,820	1,524,001	438,803	295,279	54,874	512,712	62,404	1,363,130	89.3	160,871	136,548	201,569	50,924
Kansas City, Mex. & Orient of Tex.	June	465	454,697	20,684	488,469	183,508	77,264	10,452	117,954	11,145	400,011	81.9	88,458	80,952	16,181	61,386
	6 mos.	465	2,821,977	98,287	3,010,093	937,645	508,077	60,385	872,178	74,316	2,452,219	81.5	557,874	514,662	141,612	142,697
Kansas City Southern	June	784	1,172,553	96,798	1,440,038	191,164	241,933	59,134	449,269	83,686	1,024,913	71.2	415,125	303,611	237,909	349,416
	6 mos.	784	7,414,120	494,026	8,856,871	1,027,559	1,533,477	342,422	2,807,060	488,319	6,199,805	70.0	2,657,066	1,973,927	1,577,566	1,941,253
Texarkana & Fort Smith	June	81	182,122	7,979	206,071	21,880	23,778	6,621	60,790	11,643	125,684	61.0	80,387	68,236	42,343	21,735
	6 mos.	81	1,164,680	44,078	1,321,134	134,320	125,464	40,393	376,074	63,555	748,612	56.7	572,522	499,623	341,565	284,602
Kansas, Oklahoma & Gulf	June	326	219,713	2,568	226,364	78,413	28,066	10,051	61,852	9,533	179,378	79.2	46,986	36,223	22,926	47,460
	6 mos.	326	1,387,430	17,943	1,434,921	416,228	150,362	65,579	394,129	59,554	1,006,745	70.2	428,176	363,364	274,695	5,030
Lake Superior & Ishpeming	June	160	316,479	789	367,702	47,407	22,916	538	69,724	7,148	147,733	40.2	219,969	196,720	188,172	112,529
	6 mos.	160	769,943	11,492	876,372	199,170	163,886	3,174	260,433	62,284	688,947	78.6	187,425	91,270	65,502	91,696
Lake Terminal	June	13	.....	.....	99,859	12,786	20,396	.....	51,655	2,058	86,895	87.0	12,964	10,052	14,155	—1,765
	6 mos.	13	.....	.....	496,412	99,076	122,086	.....	296,117	11,974	529,253	106.6	—32,841	—56,629	—36,397	—54,242
Lehigh & Hudson River	June	96	203,286	1,468	215,644	29,874	37,915	2,692	79,210	10,551	160,242	74.3	55,402	42,871	22,015	58,488
	6 mos.	96	1,325,887	8,622	1,403,895	137,155	202,167	15,389	512,907	60,206	927,824	66.1	476,071	386,492	252,509	307,556
Lehigh & New England	June	216	430,776	1,094	438,731	75,327	84,628	6,024	150,799	17,764	334,542	76.3	104,189	90,475	85,394	153,964
	6 mos.	216	2,554,156	9,600	2,603,174	330,796	627,525	31,874	961,939	105,930	2,057,287	79.0	545,887	469,102	454,321	756,211
Lehigh Valley	June	1,364	4,648,623	659,775	5,813,262	594,420	1,058,674	135,703	2,258,232	150,035	4,233,148	72.8	1,580,114	1,253,901	1,085,645	1,149,656
	6 mos.	1,363	27,937,950	3,348,285	33,925,004	3,353,483	7,103,031	819,075	14,374,607	883,264	26,724,629	78.8	7,200,375	5,493,287	4,569,444	4,587,188
Louisiana & Arkansas	June	301	275,115	9,762	293,406	50,836	57,233	12,464	76,294	10,153	206,776	70.5	86,630	59,302	50,493	—1,964
	6 mos.	302	1,768,931	57,285	1,869,112	287,326	330,833	74,913	496,025	60,743	1,247,591	66.7	621,521	436,580	356,340	134,165
Louisiana Ry. & Nav. Co.	June	338	220,489	10,905	242,562	59,654	34,011	13,103	109,774	10,626	222,689	91.8	19,873	—3,653	—19,240	—107,679
	6 mos.	336	1,527,924	57,741	1,655,879	343,487	207,454	75,918	660,130	64,794	1,334,858	80.6	321,021	181,453	20,270	—231,361
Louisiana Ry. & Nav. Co. of Tex.	June	206	72,379	3,240	78,650	26,764	15,571	3,028	34,460	5,462	85,285	108.6	—6,635	—10,635	—22,103	—17,256
	6 mos.	206	452,059	20,559	494,461	169,667	83,470	18,538	236,448	33,659	541,782	109.6	—47,321	—71,992	—153,584	—103,307
Louisville & Nashville	June	5,077	8,778,672	1,572,388	11,002,318	1,824,422	2,558,838	223,770	3,824,088	367,152	8,845,293	80.4	2,157,025	1,565,451	1,518,972	1,632,974
	6 mos.	5,077	54,413,965	8,792,954	67,304,750	10,296,975	15,723,443	1,470,570	23,899,146	2,078,429	53,774,695	79.9	13,530,055	10,048,880	9,971,195	10,987,995
Louisville, Henderson & St. Louis	June	199	169,183	45,440	229,637	60,014	33,621	8,541	97,559	11,656	212,877	92.7	16,760	—262	—6,454	47,063
	6 mos.	199	1,295,732	253,312	1,654,464	335,054	277,874	51,266	640,495	70,780	1,385,320	83.7	269,144	147,909	99,446	398,295

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Maine Central	June	1,122	$1,045,371	$313,183	$1,530,986	$256,041	$294,418	$17,651	$577,132	$50,004	$1,197,221	78.2	$333,765	$220,628	$201,331	$194,184
	6 mos.	1,122	7,130,685	1,615,362	9,607,434	1,465,604	1,775,404	90,730	3,806,849	302,208	7,441,725	77.5	2,165,709	1,511,349	1,312,028	1,225,144
Midland Valley	June	364	256,750	16,953	280,959	71,509	43,318	7,903	72,759	12,273	207,530	73.9	73,429	59,506	33,825	65,722
	6 mos.	364	1,546,837	99,415	1,700,579	269,270	215,980	46,014	456,424	76,941	1,057,893	62.2	642,686	545,134	391,410	486,236
Minneapolis & St. Louis	June	1,627	1,001,007	71,003	1,137,491	203,960	220,240	34,985	505,288	43,731	1,009,532	88.8	127,959	66,192	8,178	54,019
	6 mos.	1,627	5,945,090	454,223	6,773,092	1,158,659	1,446,575	213,444	3,213,209	263,602	6,293,780	92.9	479,312	105,108	—270,242	—573,885
Minneapolis, St. Paul & S. S. Marie	June	4,385	3,343,757	448,732	4,148,452	749,087	706,025	84,671	1,391,303	117,836	3,080,562	74.3	1,067,890	840,073	724,353	612,799
	6 mos.	4,385	17,896,363	2,301,460	21,835,168	3,235,626	4,445,532	467,421	8,659,223	719,971	17,626,988	80.7	4,208,180	2,921,497	2,194,539	1,795,677
Duluth, South Shore & Atlantic	June	573	372,043	50,889	467,278	169,461	67,339	7,925	184,492	11,216	443,670	94.9	23,608	—12,400	—25,796	62,997
	6 mos.	581	1,947,692	349,716	2,492,987	502,267	411,684	48,192	1,086,471	65,257	2,139,110	85.8	353,877	167,787	61,734	261,167
Spokane International	June	165	79,082	9,942	97,075	15,010	9,219	3,399	30,026	6,272	65,007	67.0	32,068	26,556	19,736	21,770
	6 mos.	163	442,183	58,746	540,847	90,627	53,460	20,838	188,604	38,788	399,270	73.8	141,577	108,462	69,705	101,690
Mississippi Central	June	161	114,552	6,782	125,889	24,267	23,439	9,771	35,165	7,446	100,088	79.5	25,801	19,440	18,600	20,994
	6 mos.	161	730,746	43,360	800,831	125,531	133,891	55,898	215,794	47,899	578,963	72.3	221,868	173,705	165,585	174,023
Missouri & North Arkansas	June	364	97,287	11,041	116,433	26,238	15,930	8,885	53,791	7,323	112,167	96.3	4,266	1,698	—8,982	7,796
	6 mos.	364	682,079	63,767	795,454	175,892	123,539	58,541	339,308	47,777	747,677	93.6	50,777	34,568	—37,142	31,841
Missouri-Kansas-Texas Lines	June	3,188	3,244,264	622,068	4,204,530	716,320	795,282	118,460	1,322,073	157,977	3,131,610	74.48	1,072,920	864,634	682,392	483,603
	6 mos.	3,188	19,828,061	3,382,635	25,295,424	3,321,404	4,816,357	690,694	8,098,358	986,359	18,051,404	71.36	7,224,020	5,801,880	4,817,076	5,292,379
Missouri Pacific	June	7,460	7,775,254	1,164,760	9,796,841	1,766,129	1,851,392	292,892	3,417,167	382,052	7,748,641	79.1	2,048,200	1,685,377	1,318,426	684,945
	6 mos.	7,428	49,484,052	6,657,647	61,165,201	9,695,050	11,983,561	1,746,808	22,052,183	2,235,920	47,649,979	77.9	13,515,222	10,935,099	8,602,556	5,871,007
Gulf Coast Lines	June	1,026	939,238	135,627	1,135,695	222,794	216,795	41,922	272,098	59,819	811,894	71.49	323,801	277,730	223,536	5,113
	6 mos.	1,020	6,502,974	838,607	7,768,148	1,336,568	1,290,079	248,190	2,326,488	354,768	5,530,604	71.20	2,237,544	1,944,143	1,445,299	1,147,178
International-Great Northern	June	1,159	1,065,585	215,623	1,403,870	268,004	228,929	35,393	571,746	69,047	1,161,130	82.71	242,740	200,767	148,988	141,070
	6 mos.	1,159	6,926,821	1,091,787	8,770,552	1,444,334	1,488,695	214,246	3,725,635	406,629	7,261,143	82.79	1,509,409	1,257,693	734,106	828,875
San Antonio, Uvalde & Gulf	June	318	163,538	17,730	193,721	35,877	21,339	5,548	67,857	7,259	138,422	71.5	55,299	51,408	23,723	15,872
	6 mos.	318	987,287	109,526	1,174,496	231,648	130,562	32,914	332,001	44,850	775,754	66.0	398,742	375,740	197,625	116,225
Texas & Pacific	June	2,014	3,150,186	529,813	3,907,991	617,197	608,528	86,246	1,260,594	119,446	2,688,995	68.8	1,218,996	1,013,495	681,807	216,098
	6 mos.	2,014	19,897,432	2,913,521	24,237,380	3,537,199	3,840,540	472,440	7,926,279	659,918	16,444,685	67.8	7,792,695	6,690,723	4,798,914	2,232,125
Mobile & Ohio	June	1,159	1,152,895	97,527	1,323,027	223,412	232,311	57,292	513,749	49,802	1,073,807	81.2	249,220	166,990	132,416	189,664
	6 mos.	1,160	7,467,143	560,375	8,507,064	1,296,053	1,571,087	341,662	3,212,607	296,881	6,698,678	78.7	1,808,386	1,311,448	989,931	1,305,082
Monongahela	June	171	579,773	13,005	596,468	75,000	75,000	1,246	141,638	10,232	303,071	50.8	293,397	271,526	179,293	215,504
	6 mos.	171	3,360,741	99,870	3,488,683	500,000	485,000	6,375	906,246	63,406	1,960,737	56.2	1,527,946	1,405,831	837,190	1,183,699
Monongahela Connecting	June	7	.....	.....	.....	164,191	319	319	68,770	3,386	118,815	72.4	45,376	36,366	36,006	25,109
	6 mos.	7	.....	.....	.....	958,905	2,232	2,232	427,778	19,954	741,616	77.3	217,289	175,453	172,616	203,967
Montour	June	56	134,034	.....	22	134,882	17,139	1,226	28,473	5,508	108,848	80.7	26,034	24,534	52,321	32,187
	6 mos.	56	735,057	.....	22	738,760	106,772	29,201	184,880	43,882	176,931	77.3	167,772	158,772	310,719	191,003
Nashville, Chattanooga & St. Louis	June	1,259	1,262,407	285,997	1,691,398	214,791	386,504	86,266	619,029	78,329	1,389,856	82.2	301,542	226,454	234,802	346,161
	6 mos.	1,259	8,453,272	1,706,445	11,099,312	1,500,697	2,486,085	518,754	4,002,355	478,319	9,030,417	81.4	2,068,895	1,629,420	1,664,820	2,007,689
Nevada Northern	June	165	79,944	4,809	93,469	15,470	7,074	839	13,478	4,448	41,584	44.5	51,885	39,753	39,201	37,830
	6 mos.	165	410,580	30,754	488,531	77,004	54,957	5,591	86,835	26,563	252,137	51.6	236,394	171,432	173,349	197,512
Newburgh & South Shore	June	6	.....	.....	207,278	25,729	40,835	.....	70,167	5,542	142,273	68.6	65,005	50,550	46,067	—384
	6 mos.	6	.....	.....	1,023,340	99,524	247,983	.....	398,957	31,174	777,638	76.0	245,702	165,565	181,071	74,190
New Orleans Great Northern	June	276	200,941	20,830	231,387	39,478	34,424	13,296	78,699	11,064	177,340	76.6	54,047	38,202	18,059	37,827
	6 mos.	276	1,444,378	117,103	1,615,827	232,640	272,768	79,631	506,100	67,610	1,160,323	71.8	455,504	352,421	239,462	275,941
New Orleans Terminal	June	20	3,814	.....	167,941	26,030	5,867	.....	52,612	1,777	86,286	51.4	81,655	70,647	65,269	71,252
	6 mos.	20	10,314	.....	877,379	154,487	45,965	.....	338,096	11,228	549,776	62.7	327,603	261,518	221,508	244,490
New York Central	June	6,906	19,090,713	9,208,750	32,595,698	4,579,589	6,725,173	452,655	10,387,742	1,197,229	23,853,239	73.2	8,742,459	6,450,093	6,124,008	6,981,495
	6 mos.	6,906	113,036,181	46,503,793	183,107,132	23,095,785	39,657,974	2,660,759	64,874,013	6,865,369	140,005,836	76.5	43,101,296	30,259,468	28,544,608	30,959,292
Cincinnati Northern	June	244	285,339	5,319	301,522	43,560	65,266	6,452	107,869	10,396	237,322	78.7	64,200	45,056	21,118	41,521
	6 mos.	244	1,955,896	27,498	2,030,386	237,342	416,643	37,628	688,246	66,321	1,449,881	71.4	580,505	445,647	259,950	377,044
Cleve., Cinn., Chicago & St. Louis	June	2,396	5,329,815	1,370,503	7,375,360	974,245	1,602,622	150,319	2,689,691	267,922	5,770,292	78.2	1,605,068	1,199,067	942,407	1,205,389
	6 mos.	2,396	32,466,894	7,168,241	43,500,504	4,691,068	9,410,925	891,167	16,510,164	1,625,977	33,598,268	77.2	9,902,236	7,447,576	6,314,578	7,208,771
Indiana Harbor Belt	June	130	.....	.....	1,024,948	120,264	108,424	5,023	358,850	27,998	632,908	61.8	392,040	327,908	281,455	135,292
	6 mos.	130	.....	.....	6,077,405	629,113	695,038	29,126	2,491,202	158,790	4,087,092	67.3	1,990,313	1,643,264	1,343,370	896,157
Michigan Central	June	1,858	5,192,001	2,004,002	7,999,925	966,758	1,523,239	131,964	2,385,083	219,854	5,331,868	66.7	2,668,057	2,120,120	2,053,529	1,912,897
	6 mos.	1,858	31,422,937	9,495,880	45,289,157	4,683,891	8,825,883	765,491	14,687,180	1,332,068	30,882,436	68.2	14,406,721	11,382,211	10,877,246	10,428,310
Pittsburgh & Lake Erie	June	231	2,412,637	191,721	2,692,581	366,069	887,786	28,023	807,365	81,434	2,175,251	80.8	517,330	327,908	281,455	135,292
	6 mos.	231	13,328,865	1,190,801	15,024,785	1,924,342	5,010,983	167,429	4,950,602	504,831	12,579,543	83.7	2,445,242	1,513,351	1,343,370	896,157
New York, Chicago & St. Louis	June	1,690	3,876,768	174,124	4,201,563	656,465	840,079	122,682	1,495,859	138,166	3,245,560	77.2	956,003	753,082	575,386	764,041
	6 mos.	1,690	24,264,661	807,537	25,872,527	3,205,585	4,999,419	784,842	9,336,796	872,016	19,146,004	74.0	6,726,523	5,206,808	3,895,754	4,659,327

Louisville, Henderson & St. Louis... June 199 169,183 45,440 229,637 335,054 277,874
6 mos. 199 1,295,732 253,312 1,654,464

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
N. Y., New Haven & Hartford	June	2,149	$6,370,033	$4,080,542	$11,734,961	$1,836,847	$2,176,339	$98,541	$3,566,861	$304,334	$8,151,323	69.5	$3,583,638	$2,974,689	$2,427,197	$2,179,120
	6 mos.	2,156	35,988,707	22,763,804	66,006,165	9,850,830	12,513,316	558,773	22,149,787	1,891,570	48,005,789	72.7	18,000,376	14,301,326	11,105,600	10,212,820
New York Connecting	June	20	137,142	.....	172,894	21,958	13,653	.....	38,973	1,706	76,290	44.1	96,604	56,604	35,597	77,140
	6 mos.	20	1,177,841	.....	1,362,886	147,762	73,535	.....	261,083	10,063	492,443	36.1	870,443	632,443	475,889	549,580
New York, Ontario & Western	June	569	679,823	206,159	1,062,777	150,763	208,656	20,319	442,934	33,088	864,124	81.3	198,653	153,225	106,198	201,230
	6 mos.	569	3,876,149	580,927	5,442,779	725,577	1,070,386	116,731	2,668,831	207,086	4,830,810	88.8	611,969	321,217	35,150	—43,477
Norfolk & Western	June	2,241	8,041,882	505,268	8,859,888	1,415,535	1,672,436	110,785	2,185,004	262,434	5,658,405	63.9	3,201,483	2,401,169	2,645,916	3,084,926
	6 mos.	2,241	44,856,087	2,805,533	49,501,489	7,648,404	9,697,246	674,057	13,049,924	1,558,675	32,621,935	65.9	16,879,554	12,075,988	13,418,266	16,682,262
Norfolk Southern	June	931	847,888	43,077	938,402	107,847	113,150	30,710	301,242	29,424	581,732	62.0	356,676	276,689	233,131	217,214
	6 mos.	931	4,242,619	229,427	4,749,731	588,566	654,264	168,706	1,733,843	180,385	3,313,523	69.8	1,436,208	1,110,305	917,295	1,007,930
Northern Pacific	June	6,708	5,898,506	1,254,699	7,949,691	1,544,247	1,667,579	247,419	2,569,257	257,503	6,351,198	79.9	1,598,493	907,395	1,350,888	1,560,263
	6 mos.	6,708	35,373,434	5,232,439	44,576,322	7,026,798	9,207,374	1,354,402	15,699,607	1,536,828	35,268,436	79.1	9,307,886	5,211,020	7,634,129	5,752,513
Northwestern Pacific	June	477	330,156	183,582	579,686	106,446	91,830	10,471	242,648	22,679	473,936	81.8	105,750	65,157	59,081	103,015
	6 mos.	477	1,592,519	838,736	2,747,114	604,258	532,544	55,109	1,383,317	146,763	2,720,801	99.0	26,313	—217,616	—243,545	28,174
Pennsylvania R. R.	June	10,515	38,213,110	11,438,531	55,030,777	7,422,999	10,940,934	864,074	18,529,245	1,629,447	40,055,425	72.8	14,975,352	11,700,510	10,309,038	9,398,420
	6 mos.	10,515	215,154,021	65,460,500	309,166,552	38,364,589	64,980,783	4,919,646	111,904,043	9,610,566	233,751,606	75.6	75,414,946	58,970,523	51,277,232	51,125,413
Baltimore, Chesapeake & Atlantic	June	130	90,235	29,705	130,072	11,443	108,394	1,559	73,269	1,998	196,663	151.2	—66,591	—66,591	—65,125	—17,276
	6 mos.	130	408,172	122,736	573,563	65,477	416,542	9,257	424,417	16,350	932,043	162.5	—358,480	—358,492	—356,672	—202,731
Long Island	June	403	981,791	2,379,022	3,567,729	421,417	413,139	51,692	1,351,867	75,255	2,315,696	64.9	1,252,033	950,287	740,999	524,815
	6 mos.	403	5,647,539	11,985,975	18,776,234	2,517,469	2,967,525	189,786	8,033,618	487,732	14,217,879	75.7	4,558,355	3,636,500	2,762,868	1,538,486
West Jersey & Seashore	June	370	415,961	413,710	877,185	129,462	118,784	21,759	378,812	27,857	677,013	77.2	200,172	105,771	74,183	89,127
	6 mos.	370	2,353,297	2,116,075	4,706,542	787,148	738,993	104,733	2,319,522	158,207	4,110,875	87.3	595,667	332,297	159,139	203,779
Peoria & Pekin Union	June	19	28,164	1,579	156,798	14,009	14,280	3,736	62,084	7,824	101,933	65.0	54,865	37,753	65,590	19,187
	6 mos.	19	156,441	10,628	996,997	101,450	83,171	19,976	413,782	45,712	664,091	66.6	332,906	230,570	357,090	251,092
Pere Marquette	June	2,244	3,054,937	268,870	3,561,272	589,841	774,576	66,238	1,185,947	114,361	2,717,209	76.3	844,063	623,996	495,938	490,139
	6 mos.	2,244	18,110,559	1,345,596	20,689,256	2,382,448	4,529,928	380,483	7,176,226	666,753	15,126,785	73.1	5,562,471	4,317,673	3,767,086	4,057,910
Pittsburgh & Shawmut	June	102	155,525	2,024	160,221	22,057	33,326	1,861	43,180	6,764	107,188	66.9	53,033	51,592	45,649	29,121
	6 mos.	102	967,579	28,602	1,007,752	111,060	212,009	11,420	271,325	40,156	645,970	64.1	361,782	353,792	317,877	134,773
Pittsburgh & West Virginia	June	92	330,608	5,010	365,050	20,159	71,144	14,830	63,543	24,057	203,081	55.6	161,969	111,506	186,297	109,052
	6 mos.	92	1,843,492	33,652	2,064,842	124,993	400,846	89,469	395,523	116,994	1,184,468	57.4	880,374	595,341	966,922	1,103,285
Pittsburgh, Shawmut & Northern	June	198	170,969	1,497	176,338	41,243	36,987	1,648	47,072	5,732	132,682	75.2	43,656	40,587	33,282	—15,514
	6 mos.	198	922,399	12,022	950,466	188,078	195,751	10,249	306,524	35,546	736,148	77.4	214,318	195,949	154,093	53,297
Quincy, Omaha & Kansas City	June	249	43,529	8,323	60,074	37,529	7,602	751	24,907	2,130	72,895	121.3	—12,821	—17,656	—20,540	—25,650
	6 mos.	249	268,015	56,247	362,568	169,643	54,420	4,331	168,980	15,354	410,992	113.4	—48,424	—77,613	—93,809	—118,848
Reading	June	1,136	5,806,183	620,122	6,823,133	1,186,212	1,737,074	100,946	2,603,287	210,518	5,840,422	85.6	982,711	693,754	818,801	1,046,867
	6 mos.	1,136	37,342,836	4,022,423	43,494,922	5,829,893	10,533,177	525,259	16,535,873	1,230,622	34,711,666	79.8	8,783,256	6,508,923	7,076,380	8,371,047
Atlantic City	June	163	118,230	186,952	325,122	73,910	27,482	8,622	179,232	13,951	303,432	93.3	21,690	—15,660	—40,872	2,353
	6 mos.	161	701,407	682,943	1,485,140	428,602	164,662	49,997	1,107,038	41,452	1,785,655	120.2	—300,515	—524,615	—669,594	—574,430
Perkiomen	June	41	99,806	3,565	106,271	20,518	8,656	106	46,543	1,282	77,145	72.6	29,126	25,844	18,559	26,218
	6 mos.	41	570,614	17,785	606,842	98,166	41,734	638	287,718	7,565	436,044	71.9	170,798	150,585	110,932	141,785
Port Reading	June	19	123,654	.....	174,532	20,956	20,977	229	56,482	5,399	104,043	59.6	70,489	55,420	—6,042	—20,485
	6 mos.	19	819,612	.....	1,081,810	119,730	52,915	1,374	391,028	22,225	587,258	54.3	494,552	406,515	—6,079	60,317
Richmond, Fredericksburg & Potomac	June	117	589,594	246,521	999,259	145,274	164,104	10,327	333,970	38,671	713,597	71.4	285,662	237,161	127,177	153,091
	6 mos.	117	2,820,306	2,059,657	5,935,375	643,141	1,009,535	57,891	2,045,168	216,571	4,149,221	69.9	1,786,154	1,460,816	1,051,146	1,083,149
Rutland	June	413	310,282	105,651	556,578	132,504	98,740	11,124	196,024	17,240	457,584	82.2	98,994	73,081	72,856	44,198
	6 mos.	413	1,888,854	672,390	3,363,953	646,667	625,841	66,301	1,282,439	94,970	2,727,583	81.1	636,370	473,173	472,886	358,894
St. Louis-San Francisco	June	5,121	4,84.,932	1,085,860	6,460,753	873,101	1,322,514	128,149	2,176,512	233,588	4,671,877	72.31	1,788,876	1,407,836	1,409,974	1,693,895
	6 mos.	5,072	29,677,718	5,738,467	38,328,143	4,683,462	7,848,822	737,883	13,362,890	1,397,914	27,639,567	72.11	10,688,576	8,506,548	8,736,980	9,807,728
Ft. Worth & Rio Grande	June	233	86,801	11,991	110,686	31,479	20,474	3,453	58,973	6,530	120,448	108.8	—9,762	—13,877	—21.296	—9,467
	6 mos.	233	461,649	72,838	607,338	104,457	126,340	20,691	314,646	33,515	596,312	98.1	11,026	—13,747	—65,444	—109,755
St. Louis-San Francisco & Texas	June	154	111,475	11,989	129,399	31,388	25,789	4,301	59,319	6,918	126,889	98.1	2,510	—938	—26,167	—31,876
	6 mos.	154	709,375	68,239	806,568	124,341	146,623	29,129	332,901	42,129	672,520	83.4	134,048	117,290	—27,160	51,785
St. Louis Southwestern	June	940	1,275,077	84,546	1,423,218	216,014	242,101	65,652	383,256	67,187	983,447	69.1	439,771	382,455	264,909	179,137
	6 mos.	940	7,921,832	490,672	8,804,261	1,217,391	1,364,206	408,895	2,348,607	388,916	5,753,893	65.4	3,050,368	2,661,738	1,943,952	1,463,868
St. Louis Southwestern of Texas	June	807	517,297	45,948	609,803	162,376	128,865	31,008	268,954	34,190	632,178	103.7	—22,375	—50,358	—14,838	—49,744
	6 mos.	807	2,864,228	254,262	3,419,615	1,060,366	740,049	183,867	1,515,799	204,408	3,739,092	109.3	—319,477	—486,987	—276,459	—98,086
San Diego & Arizona	June	156	102,753	10,835	125,069	15,438	15,882	4,306	31,591	8,373	76,929	61.5	48,140	42,456	40,483	43,162
	6 mos.	156	516,309	112,655	661,371	103,908	102,459	24,677	185,265	52,549	477,200	72.2	184,171	150,107	148,715	224,332
Seaboard Air Line	June	4,499	3,548,373	494,282	4,399,698	498,950	783,008	209,291	1,648,218	179,793	3,355,769	76.3	1,043,929	736,742	770,095	699,171
	6 mos.	4,499	22,687,168	4,616,798	30,082,522	3,251,584	4,859,024	1,228,842	11,234,740	1,128,525	22,172,224	73.7	7,910,298	5,996,200	5,480,908	5,842,390

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1928—CONTINUED

Revenues and Expenses of Railways

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Southern Ry.	June	6,770	$8,322,754	$2,156,641	$11,432,180	$1,825,446	$2,228,113	$264,483	$3,799,839	$354,342	$8,547,211	74.8	$2,884,969	$2,114,105	$2,009,808	$2,386,782
	6 mos.	6,771	53,009,916	11,881,034	70,430,527	10,423,331	13,028,944	1,538,053	23,766,291	2,113,240	51,355,243	72.9	19,075,284	14,493,973	13,098,456	14,235,045
Alabama Great Southern	June	314	563,398	168,403	785,228	140,274	166,049	21,548	250,447	23,666	609,477	77.6	175,751	107,466	141,790	168,183
	6 mos.	314	3,715,556	855,696	4,898,293	830,336	996,482	129,552	1,520,303	143,556	3,661,294	74.7	1,236,999	879,849	1,047,048	1,111,593
Cinn., New Orleans & Tex. Pacific	June	338	1,394,238	273,580	1,763,134	269,923	392,222	43,097	503,292	50,652	1,270,596	72.1	492,538	375,689	336,686	449,680
	6 mos.	338	8,331,932	1,681,163	10,589,355	1,632,773	2,154,984	252,289	3,060,564	317,719	7,508,860	70.9	3,080,495	2,443,502	2,291,566	2,343,993
Georgia Southern & Florida	June	397	244,114	81,727	352,044	74,304	69,588	12,404	136,965	11,217	308,987	87.8	43,057	20,317	19,467	14,338
	6 mos.	399	1,339,976	754,742	2,286,235	462,214	471,578	70,783	959,028	68,091	2,072,481	90.7	213,754	79,113	66,122	—76,904
New Orleans & Northeastern	June	204	320,944	76,634	429,596	67,952	85,818	12,367	126,632	14,367	311,609	72.5	117,987	75,199	42,158	60,049
	6 mos.	204	2,114,557	415,747	2,716,619	374,814	503,102	75,673	802,907	90,345	1,871,235	68.9	845,384	581,112	391,696	450,869
Northern Alabama	June	110	71,743	5,911	80,583	21,336	3,044	2,346	29,714	2,864	59,303	73.6	21,280	15,380	—5,732	3,130
	6 mos.	110	484,107	38,844	538,493	134,556	17,721	12,743	199,149	16,623	380,545	70.7	157,948	120,986	126	107,020
Southern Pacific	June	8,909	13,691,987	3,713,134	19,177,947	2,300,384	2,970,896	422,049	6,163,825	681,415	12,789,678	66.7	6,388,269	4,811,665	4,290,264	4,325,091
	6 mos.	8,911	73,546,668	19,180,460	102,213,573	13,313,810	17,701,610	2,576,721	34,021,592	4,032,636	73,277,722	71.7	28,935,851	20,724,327	19,078,394	17,781,261
So. Pacific Steamship Lines	June	....	741,982	58,266	903,406	17,627	174,663	13,958	578,230	37,440	821,918	91.0	81,488	76,223	78,108	84,599
	6 mos.	....	4,495,678	285,118	5,514,808	105,992	1,141,168	101,939	3,592,396	218,575	5,160,070	93.6	354,738	334,881	340,917	589,128
Texas & New Orleans	June	4,728	3,971,958	1,036,276	5,443,691	947,118	1,109,251	171,437	1,960,718	269,386	3,401,029	80.8	1,042,662	730,686	563,730	383,969
	6 mos.	4,728	24,743,100	5,434,818	32,749,349	5,728,634	6,811,368	1,066,217	12,170,622	1,590,646	27,339,463	83.5	5,409,886	3,547,172	2,367,587	1,590,263
Spokane, Portland & Seattle	June	554	567,759	128,323	766,080	144,873	98,484	11,638	229,747	23,942	514,416	67.1	251,664	167,970	164,096	180,515
	6 mos.	554	3,222,222	540,966	4,130,884	653,855	615,502	66,391	1,257,663	132,683	2,751,039	66.6	1,379,845	877,322	842,406	850,498
Tennessee Central	June	296	206,598	20,690	240,467	57,470	41,223	8,416	92,320	12,739	212,054	88.2	28,413	23,315	7,262	33,116
	6 mos.	296	1,408,196	119,254	1,605,528	315,670	249,964	52,750	583,927	78,800	1,280,354	79.7	325,174	290,517	178,991	157,438
Terminal Railroad Assn. of St. L.	June	55	.....	.....	1,044,439	195,633	79,844	2,861	440,316	26,686	747,265	71.5	297,174	199,990	274,902	315,981
	6 mos.	55	.....	.....	6,563,016	1,007,643	537,316	14,676	2,713,845	194,043	4,476,580	68.2	2,086,436	1,476,898	1,972,903	2,081,810
Texas Mexican	June	162	91,094	4,067	101,561	16,941	15,944	3,521	38,938	6,748	81,796	80.5	19,765	14,742	4,991	—10,155
	6 mos.	162	593,812	24,191	656,978	92 697	99,841	22,559	216,572	35,439	466,286	71.0	190,692	160,485	115,360	19,462
Toledo, Peoria & Western	June	239	159,959	1,362	168,996	35,506	10,038	10,680	54,397	10,587	121,208	71.7	47,788	46,575	31,664	—10,457
	6 mos.	239	926,898	13,628	982,412	246 206	104,282	65,143	337,001	50,581	803,213	81.8	179,199	162,924	87,668	—38,482
Toledo Terminal	June	28	.....	.....	119,412	4,010	17,074	566	46,898	4,302	72,850	61.0	46,562	28,634	53,861	40,374
	6 mos.	28	.....	.....	722,809	53,437	96,420	3,332	287,436	28,430	469,055	64.9	253,754	148,329	313,999	322,121
Trinity & Brazos Valley	June	367	108,827	7,183	122,934	39,862	31,619	5,640	68,725	11,843	147,672	120.1	—24,738	—32,403	—50,139	—57,906
	6 mos.	367	962,117	41,804	1,045,835	272,962	197,990	31,928	483,018	69,375	999,468	95.6	46,367	729	—145,222	—136,065
Ulster & Delaware	June	128	40,657	19,292	103,513	18,539	15,473	2,008	47,479	4,617	88,116	85.1	15,397	9,647	6,268	—5,485
	6 mos.	128	223,303	38,667	482,056	88,477	94,102	8,448	248,618	29,028	468,673	97.2	13,383	—21,117	—36,897	—64,763
Union Railroad of Penna.	June	45	.....	.....	1,006,500	101,842	198,346	153	362,778	12,991	676,110	67.2	330,390	283,890	401,120	263,138
	6 mos.	45	.....	.....	4,681,629	513,259	1,080,653	970	2,205,612	79,441	3,879,935	82.9	801,694	650,175	1,192,841	910,037
Union Pacific	June	3,713	6,247,254	1,572,730	8,757,393	1,412,744	1,971,347	212,764	2,466,279	239,113	6,523,323	74.5	2,234,070	1,525,464	1,328,485	1,294,849
	6 mos.	3,712	39,919,733	7,108,128	51,587,012	6,411,315	11,412,486	1,112,961	14,410,192	1,918,903	36,226,528	70.2	15,360,484	11,250,527	9,928,839	7,462,275
Oregon Short Line	June	2,539	2,110,180	409,265	2,792 600	581,702	482,440	66,170	869,975	88,104	2,174,780	77.9	617,820	342,353	269,477	158,066
	6 mos.	2,539	14,088,629	1,832,567	17,176,391	3,094,096	3,108,378	342,759	5,051,846	738,517	12,693,789	73.9	4,482,602	2,872,057	2,364,037	1,757,266
Oregon-Wash. R. R. & Nav. Co.	June	2,343	1,763,845	352,785	2,378,017	538,415	368,707	84,176	890,572	96,997	2,001,685	84.2	376,332	188,253	54,574	25,301
	6 mos.	2.343	10,427,617	1,638,077	13,376,969	2,843,899	2,341,710	462,885	5,169,863	739,171	11.728,751	87.7	1,648,218	500,980	—313,633	—65,201
Los Angeles & Salt Lake	June	1,209	1,226.443	580,495	2,070,464	390,013	330,095	86,329	628,058	52,294	1,632,288	78.8	438,176	300,671	219,003	216,309
	6 mos.	1,209	8,110,504	2,128,976	11,412,997	2,234,111	2,223,215	482,120	3,739,158	451,889	9,709,355	85.1	1,703,642	884,746	300,996	518,593
St. Joseph & Grand Island	June	258	228,428	13,515	264,426	64,884	39,962	3,713	122,618	8,816	239,993	90.8	24,433	10,689	—3,822	—8,740
	6 mos.	258	1,699,653	70.878	1,883,361	296,340	232,198	19,674	652.094	88.234	1,288,540	68.4	594,821	467,348	369,291	111,877
Utah	June	111	87,703	.....	89,100	18,551	40,334	428	24,537	5,211	89,061	100.0	39	—5,682	—10,774	25,163
	6 mos.	111	780,692	108	783,716	130,641	246,324	2,321	173,521	34.631	587,438	75.0	196,278	154,032	102,913	215,248
Virginian	June	545	1.235,949	31.568	1,336.155	188,837	299,392	15,377	297,281	36.895	832,834	62.3	503,321	375,319	424,621	675,603
	6 mos.	545	8.259,206	216.667	9.002.740	1,150,545	1,965,781	88.115	1,985.602	223,992	5,394,579	59.9	3,608,161	2,761,921	2,976,241	5,083.661
Wabash	June	2.524	4,563.054	691,212	5,696.957	874,170	1,000,476	171,900	2,174,729	182.209	4,415,978	77.5	1,280,979	1,043,664	738,783	601,160
	6 mos.	2,524	27,921,433	3,519,381	33,774,463	4,478,289	5,939,828	1,004.861	13,185,904	1,093,016	25,773,198	76.3	8,001,265	6,482,764	4,634,021	4,083,912
Ann Arbor	June	293	437.015	17.916	474,289	63,991	106,549	12,684	172,485	12,391	365,120	77.0	109,169	83,980	57,933	58,814
	6 mos.	293	2,659,011	106.563	2.852,413	299,782	581,241	80,951	1,121,195	69,281	2,147.369	75.3	705,044	556,817	399,328	418,764
Western Maryland	June	878	1,331.860	29.689	1,401,416	253,505	261,215	39,590	368,890	46,472	977,173	69.7	424,243	344,243	355,132	518,574
	6 mos.	847	8,666,268	183.209	9,125,187	1,436,464	1,773,263	249,159	2,618,920	268.269	6,377,701	69.9	2,747,486	2,242,486	2,374,660	2,854,201
Western Pacific	June	1,050	1,012,947	187,673	1,300,447	436,449	264,419	68,649	475,605	50,974	1,291,593	99.3	8,854	—82,513	—27,446	135,351
	6 mos.	1,050	5,820,233	687,374	6,992,683	1,829,852	1,516,367	345,316	2,716.607	282,009	6,757,248	96.6	235,435	—336,631	—35,382	474,861
Wheeling & Lake Erie	June	511	1.736.061	29,725	1,892,371	251,875	373,694	36,165	500,327	48,234	1,211,809	64.0	680,562	517,716	516,636	285,106
	6 mos.	511	8,637,342	153,343	9,336,305	1,165,520	2,169,359	206,501	2,734,164	273,211	6,557,364	70.2	2,778,941	1,975,858	1,958,222	1,790,730
Wichita Falls & Southern	June	168	74,167	1,969	80,897	11,884	10.573	3,119	26,067	3,914	55,557	68.68	25,340	20,364	18,646	8,385
	6 mos.	168	434,841	14,603	477,164	90,589	69,997	16,105	158,048	23,882	358,597	75.15	118,567	87,847	72,983	116,065

News of the Week

(Continued from page 275)

a. m., on August 6, and sideswiped passenger train No. 16, at a point about one mile north of Mounds, Ill., resulting in the death of eight persons and injuries to 55 others.

Train No. 16, northbound, was running at about 15 miles an hour, when the pilot of the engine struck a piece of cast-iron pipe that had fallen from a freight car. The pipe was thrown against the ties of the southbound main track with such force that the track was thrown out of line about seven inches, for a short distance, making a sharp kink in the track. The engineman of train No. 16 stopped his train at once, but No. 3 came on immediately, struck the kink in the track, and was derailed. The engine and the following seven cars left the track on the left hand side, sideswiping and derailing seven cars in the standing train.

The piece of pipe, which was 12 in. in diameter and 16 ft. long, had apparently fallen from I.C. car 209,125, which was in train No. 276, passing Mounds at 12:15 a. m., since this car checked short one piece of pipe upon arrival at East St. Louis. The car was loaded at Birmingham, and, as far as can be determined at this time, in accordance with A.R.A. specifications.

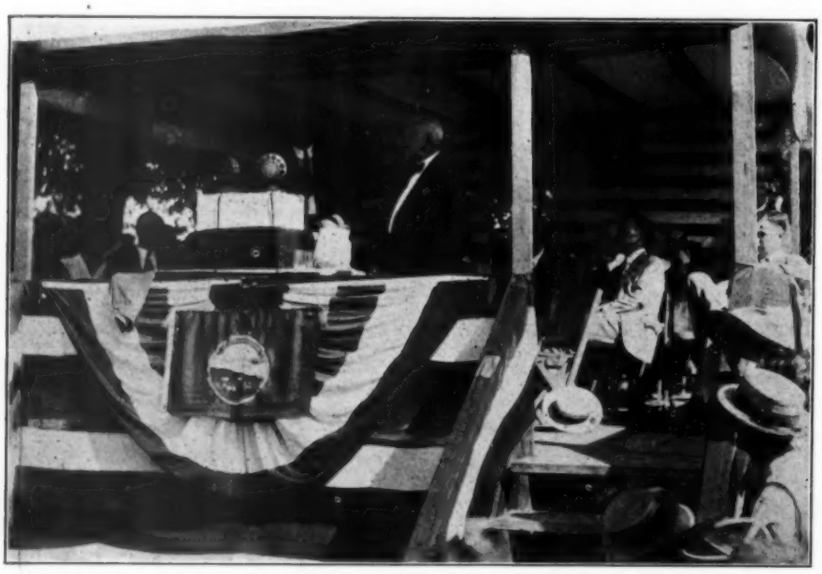
Union Pacific Presents Restored Capitol Building to Kansas

The Union Pacific has restored the first territorial capitol of Kansas, which is at Pawnee, near Fort Riley, and on August 1, with 15,000 persons in attendance, C. R. Gray, president of the railroad, formally presented the building to Governor Ben S. Paulen for the State of Kansas. The day's program included a barbecue and a review of the Kansas National Guard encamped at Fort Riley. In addition to the presentation ceremonies, the first session of the legislature was re-enacted in the capitol building with D. A. N. Chase, lieutenant governor, and J. D. M. Hamilton, speaker of the house of representatives, presiding over the legislative body in costumes like those of 1855. Governor Paulen, also in costume, read the message of Governor Reeder, first territorial governor of Kansas to the joint legislative session. Speakers at the presentation ceremonies included Mr. Gray, Charles M. Harger, editor of the Abilene Reflector, and N. H. Loomis, general solicitor of the Union Pacific.

Until a few months ago the old capitol, a two-story structure, stood on a site partly on the Union Pacific right-of-way, in a tumble-down condition with the roof and other wooden parts gone and only the stone walls standing. The interior as well as the exterior of the building was restored, under the direction of the Kansas State Historical Society, to its original condition as when constructed 73 years ago. The restoration plans included improvements to the capitol grounds which have been set aside as a state park in custody of the historical society.

The town of Pawnee was founded in 1854 by Governor Reeder. In the following year the first session of the legislature was called for July 2. At that time the town was almost inaccessible and the legislature passed the necessary legislation for the removal of the capitol to Shawnee Mission, near Kansas City.

Old Time and Modern Train Displayed Beside Restored Capitol Building



President Gray (left) and Governor Paulen on Speakers Stand During Formal Presentation

A Motorman's Bad Record

Governor A. T. Fuller of the state of Massachusetts, has sent a letter to the Board of Trustees, who, acting for the state, operate the Boston Elevated Railway, criticising in detail the conduct of the management in connection with the report of the state inspectors on the derailment on the elevated line at Harrison avenue and Beach street, Boston, on July 22, when two passengers were killed and 20 or more were injured.

The inspectors found that the derailment was due to excessive speed on a very sharp curve, where the rule prescribes a maximum speed of 10 m.p.h. The brake valve was found in running position after the derailment and the claim of the motorman that the brakes had been set but did not properly release, evidently is not accepted.

The governor's letter indicates that this motorman had been reprimanded 37 times, had been suspended twice, had been recorded as tardy or missing on 94 occasions, and had twice been recommended for dismissal. This, says the governor, indicates that the officers of the road are lax and should bear a part of the responsibility for the derailment. He asks what has been done to provide against such mishaps in the future.

The governor has also written to the chairman of the Public Utilities Board, calling attention to the defective discipline on this road. The motorman had been continued in his position without physical examination for a period of ten years. The governor suggests that monthly or semi-annual physical examinations should be held. What, asks the governor, would a man have to do to get discharged?

Railway Revenues for Half Year

Class I railroads for the six months ending with June had a net railway

operating income of $462,025,181 which was at the annual rate of return of 4.36 per cent on their property investment, according to a statement issued by the Bureau of Railway Economics. In the first half of 1927, this figure was $472,998,330 or 4.57 per cent. This compilation is based on reports from 185 Class I railroads operating 239,892 miles.

Gross revenues totaled $2,906,856,367 compared with $3,024,939,350 for the same period last year or a decrease of 3.9 per cent; operating expenses $2,205,665,746 compared with $2,310,550,185 for the same months one year ago or a decrease of 4.5 per cent. Taxes amounted to $181,872,635, compared with $185,373,886 for the same period the year before.

Twenty-six Class I railroads operated at a loss in the first half of 1928, of which ten were in the Eastern, one in the Southern and fifteen in the Western District.

Net railway operating income by districts shows:

New England Region	$17,885,869	4.67 per cent
Great Lakes Region	88,593,855	4.92 per cent
Central Eastern Region	104,966,831	4.78 per cent
Pocahontas Region	32,191,130	6.56 per cent
Total Eastern Dist.	243,637,685	5.00 per cent
Total Southern Dist.	62,407,795	4.06 per cent
Northwestern Region	43,218,678	3.35 per cent
Central West. Region.	73,506,656	3.71 per cent
Southwestern Region	39,254,367	4.27 per cent
Total Western Dist.	155,979,701	3.72 per cent
United States	462,025,181	4.36 per cent

Class I railroads in the Eastern District had a net of $243,637,685 (annual return five per cent); same one year ago $261,707,073 or 5.49 per cent.

In the Southern District the net was $62,407,795 (4.06 per cent); same one year ago $69,212,890, or 4.63 per cent. In the Western District the net was $155,979,701 (3.72 per cent); same one year ago $142,078,367, or 3.47 per cent.

St. Louis Transfer Plan Conditionally Approved

The proposal of the railroads serving St. Louis and East St. Louis, other than the Chicago & Alton, to employ a single transfer company, the Columbia Terminals Company, as their agent for the operation of off-track freight stations and the haulage between such stations and the on-track stations of the railroads, primarily for l. c. l. freight; as well as in the interchange of freight between the railroads, was approved in a general way in a proposed report by Examiner Harry C. Ames of the Interstate Commerce Commission, made public on August 2, in connection with the commission's investigation of the receipt, delivery and transfer of freight in the St. Louis-East St. Louis district by means of drays or trucks operated over public highways.

The examiner recommends a finding by the commission that the proposal of the carriers, in tariffs which had been suspended and voluntarily postponed, is not violative of any provision of the interstate commerce act and that their proposal to reduce the number of off-track stations in St. Louis from 12 to 7, and at East St. Louis from 3 to 2, has not been shown harmful to the public interest. He also recommends a finding that the present and proposed maintenance of a "constructive station" at the west end of Eads bridge as an aid to the direct receipt and delivery of freight from and to shippers and consignees is not unlawful, and, as at present operated, does not result in unlawful practices.

The examiner, however criticises some practices in connection with the payment of allowances for transfer service and recommends a finding that the proposed tariff schedules are not justified in their present form; but that the record be held open to allow respondents to make a cost study and to prepare new tariffs.

The principal controversy in the case was over the proposals of the railroads to employ a single transfer company in the collection, distribution and interchange of railroad freight except that which is handled through the constructive stations. The St. Louis Shippers' Conference had opposed this arrangement on the ground that the shippers are entitled in the first instance to on-track stations located on the rails of the Terminal Railroad Association, and that if they waive that right and agree to the substitution of off-track facilities they have the further right to insist that full and free competition be maintained in the management and operation of such stations. "Stated in another way," the report says, "these contentions assume that the shipper not only has a right to adequate service but may dictate the means employed to effectuate it. The commission should not agree with this concept of the law. The primary duty of the carrier is to furnish reasonable and adequate service and facilities, and, that done, it has the right to choose its methods and its agencies."

Counsel for the St. Louis Chamber of Commerce also took the position that the proposed contracts between the railroads and the Columbia company will create a monopoly in contravention of the Sherman anti-trust law; but the examiner reports that the commission is without jurisdiction to inquire (in this proceeding) into the validity of contracts under the anti-trust law as an initial proposition.

Regarding the proposed allowances for transfer service the report says the failure of the carriers, in the 21 years they have been paying off-track station allowances, to make a cost study to determine the proper amount of the allowances merits severe criticism and that the allowances paid to-day are not based upon cost of service but "represent a vague sort of compromise."

The Columbia Terminals Company operates completely motorized up-to-date equipment, the report says, using the tractor and trailer method, by which trailers are placed empty at on-track and off-track stations and when loading is completed a tractor is coupled on. It has 430 trailers and 107 tractors in operation.

Foreign

Accident in France

Six persons killed and 15 injured is the report of a derailment at LeMans, France, on the line from Paris to Brest, reported in the press dispatches of August 2. Five of the persons killed were mail clerks, the mail car having been completely wrecked. The report indicates that excessive speed within the station limits was the cause of the derailment.

National Railways of Mexico

Gross receipts equivalent to approximately $14,085,000 and expenditures equivalent to approximately $12,235,000 were reported by the National Railways of Mexico for the first three months of the current year. Net earnings were reported to be more than twice those reported for the corresponding period of 1927.

Gasoline Rail Cars in Use in Chile

Use of the Gasoline Rail Car by railways of Chile has increased during the past few years. This type of vehicle is now widely used for regular passenger service by both state railways and private lines. In 1926 there were in use 97 units of this type of equipment as against 27 units in 1920. Short private lines connecting Santiago with nearby points use cars of this class capable of seating 24 passengers while those in general use on the state railways carry 12 persons.

Transport Commission in Great Britain

The Royal Commission on Transport which will consider transportation problems in Great Britain has been selected according to a recent announcement, in the House of Commons, by the Minister of Transport. The commission will comprise 12 members with Sir A. Griffith-Boscawen, former minister of health and minister of agriculture, as chairman. The scope of its investigation will extend to all problems arising out of the growth of road traffic with a view to securing the employment of the available means of transport in Great Britain to the greatest public advantage. It will consider and recommend such measures as it may deem desirable in public interest for the better regulation, control, co-ordination and development of transportation.

French Trains Accelerated

According to an article appearing in a recent issue of the Railway Gazette (London), the French railways are "wresting from Great Britain the premier position in the matter of speedy railway travel." The Northern Railway, it is stated, has taken the lead by setting 60 m.p.n. as the standard speed on important trains on all three of its main lines radiating from Paris. The fastest start-to-stop schedule

is operated by this company from Paris to St. Quentin, 95.1 miles, at a speed of 62 m.p.h.

There are listed 32 daily runs in France at speeds in excess of 58 m.p.h. and 14 of these are for distances greater than 100 miles.

Of scheduled speeds over 60 m.p.h., in addition to that from Paris to St. Quentin listed above, there are the following on the Northern Railway: Paris-Lille, 156 miles, 60.4 m.p.h.; Paris-Etaples, 140.9 miles, 60.4 m.p.h.; Paris-St. Quentin. 95.1 miles, 60.1 m.p.h. The second fastest train in France is operated by the Southern Railway from Bordeaux to Dax, 91.7 miles, at 61.8 m.p.h. This company also has another run between these points at 60.5 m.p.h.

Of non-stop runs, none are listed as great as 200 miles, although there are 17 in excess of 150 miles. Of these there are two between Paris and Brussels, 192.5 miles, two between Paris and Dunkirk, 189.4 miles, and four between Paris and Calais, 184.5 miles—all operated by the Northern, which leads the other roads in this respect.

The Paris, Lyons & Mediterranean is noted as the only one of the large French railways which does not have any trains in the highest-speed class, a fact which is explained by "the vast volume of long-distance passenger traffic which is handled over the principal P. L. M. main line."

Reorganization of Victorian Railways Advocated

In his testimony before the Royal Commission on Railways regarding the financial difficulties of the government-operated Victorian Railways in Australia, the auditor-general of the State of Victoria produced figures to show that only £2,854,754 remained after last year's operating costs on these lines to pay interest charges of £3,287,277, according to the Railway Gazette (London). For the past ten years, it was pointed out, the average rate of interest on these railway loans had increased. Another statement which the auditor-general introduced showed that during the past thirteen years operating expenses and interest had been £124,651,719 as against income of £120,058,353. Thus it was necessary to balance the account by a withdrawal of £4,593,366 from the state treasury.

The witness stated it to be his opinion that the railway was over-capitalized and suggested that £15,000,000 be written off with provision for a sinking fund to liquidate this amount. He further suggested that the railways be placed under a commission solely responsible for income and expenditures; that the establishment of depreciation and general reserves be required by law and finally that the commission be given full discretion in the matters of charges and expenditures.

The Victorian Railways are now managed by a board of three commissioners. The lines comprise 4,512 miles of 5 ft. 3 in. gage and 122 miles of 2 ft. 6 in. gage. During the last financial year gross receipts were £13,760,769.

Traffic

The Delaware & Hudson has been granted permission by the New York Public Service Commission to discontinue its station at Meadowville, N. Y., on the ground that the business there is insufficient to warrant the continuance. The decision, however, requires the road to provide passenger train service for residents of Meadowville and vicinity.

The Interstate Commerce Commission has suspended, until March 10, 1929, the operation of tariffs filed by the Chesapeake & Ohio, the Norfolk & Western and the Virginian proposing to increase freight rates on bituminous coal from mines in West Virginia to Washington, D. C., and adjacent points from $2.84 to $3.13 and to reduce one rate from $3.15 to $3.13. The tariffs had been protested by representatives of consumers in Washington and by the acting co-ordinator for traffic of the federal government, which purchases coal from the districts affected.

The Public Service Commission of New York, following hearings granted on complaint of the cities of Mount Vernon and New Rochelle and other places, has reaffirmed its decision of July 15, 1925, authorizing an increase in commutation fares on the New York, New Haven & Hartford between New York City and the Connecticut state line, holding that the complainants had brought out no new evidence beyond that shown at the original hearings. The attorneys of the complaining cities say, in substance, that this decision is what they desired and that they will now proceed to test the action of the commission in the courts.

A through day coach has been added by the Pennsylvania to the "Pennsylvania Limited," one of its fast extra fare trains between New York, Philadelphia and Chicago. Prior to the inauguration of this coach service on July 19, the "Pennsylvania Limited" had been a solid pullman train during the 46 years of its existence.

I. C. C. Declines to Suspend Compromise Lake Cargo Tariffs

The Interstate Commerce Commission (by Division 2) voted on August 7 not to suspend the lake cargo coal tariffs filed by the Chesapeake & Ohio, the Norfolk & Western, the Louisville & Nashville and other southern lines to make effective the compromise agreement reached by railroads serving the northern and southern districts. Under these tariffs a differential of 35 cents a ton will apply from January 1 on lake cargo coal from mines in the southern bituminous fields. The tariffs become effective August 15 and provide for an increase of 10 cents a ton from the southern fields but under a special proviso which expires January 1 this 10-cent increase will until that date be refunded. The commission has no intention of dropping the contest against the court injunction obtained by southern coal operators restraining the Commission from suspending a reduction of 20 cents a ton on lake cargo coal from the southern district.

Idaho Seeks Rate Reduction on Fruit

The Idaho Public Utilities Commission has asked the Interstate Commerce Commission for a reduction in rates on deciduous fruit from the southern portion of that state to destinations throughout the United States and Canada. The state commission's complaint invokes the Hoch-Smith resolution and represents that the present rates on apples, pears, peaches, prunes and other fresh deciduous fruits are greatly in excess of the lowest possible lawful rates compatible with the maintenance of adequate transportation service. The complaint recites that the deciduous fruit industry of the state is suffering from a serious economic depression.

Freight Rates Between Canada and United States Under Consideration

Explaining that questions have arisen regarding the effect of the United States Supreme Court's decision in News Syndicate Company v. New York Central et al, decided November 21, 1927, on present practices in the publication of rates on traffic between points in the United States and Canada, the Interstate Commerce Commission has notified interested parties in Ex Parte 93 that the whole subject is to be considered, and that they may file briefs up to October 1. Oral argument will be heard October 11. All parties are requested to discuss the general subject matter, including the legal problems involved.

Scope of Hay Rates Case Broadened

The Interstate Commerce Commission has announced that the scope of its investigation into rates on hay in Docket No. 17,000, Part 10, the rate structure investigation, and related proceedings, would be broadened to include the entire western district. The proceedings have been assigned for hearing on September 24 at St. Paul, and on October 1 at Chicago, before Examiners Worthington and Walsh.

The filing of separate complaints or of petitions of intervention is not necessary, as it is the intention to deal comprehensively with the whole system of hay rates in the western district. The carriers will be heard first. Transit arrangements accorded by individual lines at charges in addition to the line-haul rates will not be considered.

I. C. C. Issues Revised Freight Tariff Rules

The Interstate Commerce Commission has issued a revised edition of rules governing the construction and filing of freight-rate publications, including those

of pipe-lines effective October 1.. The Commission has announced that it finds it necessary to restrict the free distribution of this tariff circular. Copies can be secured from the Superintendent of Documents, Government Printing Office, Washington, D. C. at the following prices: Single copy, 20 cents; 100 to 1000 copies, 15 cents; 1,000 copies 12 cents; and additional copies at the rate of $60 per thousand.

I. C. C. to Investigate Newsprint Rates

The Interstate Commerce Commission has ordered a general investigation into the reasonableness and propriety of the rates, rules and regulations for the transportation of newsprint paper, in carloads, over all-rail and rail-and-water routes, from producing and shipping points in official classification territory, Wisconsin, Minnesota, Michigan and Canada (in so far as the transportation takes place within the United States) to destinations in official and southern territories, including west-bank Mississippi river crossings, and the transportation of imported newsprint from seaports to such destinations. The investigation was ordered after petitions had been filed by parties to the recent proceeding involving rates from Ontario and Quebec to Nashville, Tenn., asking for a general investigation, which was concurred in by the southern carriers. A number of formal complaint cases have been consolidated with the investigation for hearing and a preliminary conference as to procedure will be held by Chairman Campbell with representatives of state commissions, shippers and carriers at Washington on September 12.

Ratings on Hay and Straw in South Revised

Increased ratings proposed in southern classification territory on hay, straw, fodder, corn husks, corn stalks, peanut hull fiber, flax shives, rice hulls, cocoanut husk fiber, pine needles, sea grass, sea moss and seaweed, in carloads and less-than carloads, and on wood excelsior, in carloads, have been found not justified by the Interstate Commerce Commission, without prejudice to the establishment of a ninth class rating on these commodities in carloads, and fourth class in less-than-carloads, wood excelsior excepted. For that commodity the Commission has approved a carload rating equivalent to 27.5 per cent of first class. Proposed increased ratings on moss, in carloads, wood excelsior in less-than-carloads, and palm or palmette fiber, in carloads and less-than-carloads, in southern classification were approved.

Increased rates, proposed on hay, straw, excelsior and similar products between official classification and southern territories were found not justified but this finding is without prejudice to the establishment of inter-territorial rates based on the ratings approved by the Commission for such commodities in southern classification. The proposed cancellation of commodity rates on moss, in carloads, from New Orleans to destinations in official classification territory was approved.

Equipment and Supplies

Locomotives

THE KWANG TUNG YUEH HAN (CANTON, CHINA) has ordered two locomotives of the 4-8-2 type from the Baldwin Locomotive Works.

THE MOGYANA RAILWAY, (BRAZIL) has ordered two locomotives of the 4-6-0 type from the American Locomotive Company.

THE NATIONAL RAILWAYS OF MEXICO has ordered two 4-6-2 type locomotives from the American Locomotive Company.

THE ILLINOIS CENTRAL has ordered one 600-hp. oil-electric locomotive from Ingersoll-Rand, Inc., and the General Electric Company.

Freight Cars

THE GREAT NORTHERN EQUIPMENT COMPANY is inquiring for 2,500 freight cars and 2,000 steel underframes. Included in the inquiry are 500 50-ft. box cars, 500 52-ft. flat cars, 500 40-ft. coal cars, all of 100,000 lb. capacity, and 1,000 all-steel ore cars. The underframes included in the inquiry will be for 80,000 lb. capacity box cars.

THE AMERICAN RAILROAD OF PORTO RICO is inquiring for 100 cane cars of 20 tons' capacity.

Passenger Cars

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA is now inquiring for 10 gas-electric rail motor cars, six cars having been added to the four reported in the *Railway Age* of July 14.

THE SOUTHERN PACIFIC has ordered one passenger and baggage gas-electric rail motor car, equipped with double power plant, from the J. G. Brill Company.

THE ALASKA RAILROAD is inquiring for two second-hand or new passenger coaches.

THE LOUISIANA & ARKANSAS has ordered one passenger and baggage gasoline rail car from the J. G. Brill Company.

Signaling

THE MICHIGAN CENTRAL has ordered from the General Railway Signal Company material for installing automatic train control—intermittent inductive type—between Toledo, Ohio, and Detroit, Mich.

THE NEW YORK RAPID TRANSIT CORPORATION (New York City) has ordered from the General Railway Signal Company material for automatic block signaling on parts of the Williamsburg bridge crossing the East river between Manhattan and Brooklyn. The signals are to be color-light, type AN.

THE NEW YORK CENTRAL, LINES WEST, has placed an order with the General Railway Signal Company for one 56-lever, model 2, unit lever type electric interlocking machine, for installation at Port Clinton, Ohio. The machine will have 43 working levers and 13 spare spaces.

Miscellaneous

Contractors are now being asked to submit prices for the 9,000,000 track ties which will be required by the Canadian National Railways for the coming year. Of the total, 2,600,000 ties are to be treated. For this process the ties are treated with a solution 70 per cent creosote oil and 30 per cent coal tar.

* * *

On the D., L. & W., East of Boonton, N. J.

Supply Trade

H. T. Heath, formerly sales engineer of the **Illinois Motive Equipment Company,** has been appointed representative of the **Timesaver Products Co.,** Chicago.

J. Thos. Rhamstine, Detroit, Mich., has taken over the business of the **American Strombos Company,** Philadelphia, Pa.

Grant Thorn, who recently resigned as sales manager of the **American Cyanamid Company,** has become associated with the subsidiaries of **International Combustion Engineering Corporation,** New York.

The L. B. Foster Company, has opened a St. Louis office at 1725 Railway Exchange building.

The Kearney & Trecker Corporation, Milwaukee, Wis., are building a new three-story office building to adjoin their present office structure and provide increased facilities for offices that were formerly occupying shop area.

Harold S. Russell has been appointed representative of the **Southern Wheel Company,** with offices in the McCormick building, Chicago. Mr. Russell succeeds **A. K. Hohmeyer,** resigned.

Paul Mackall has been appointed vice-president of the **Bethlehem Steel Corporation** in charge of general sales, succeeding **E. S. Kinsley,** who has retired to less active duties.

The **Ira J. Owen Organization,** industrial engineers, has been formed with offices in the First National Bank Building, Chicago, to analyze, reorganize and operate industrial plants in the commercial and railway fields. Mr. Owen, who heads the organization is a graduate of Cornell University and has had 25 years of experience in analyzing, reorganizing and operating industrial and commercial plants.

American Locomotive Company

Net profit of $1,502,702.15, after depreciation and federal taxes, was reported by the American Locomotive Company and its subsidiaries for the six months ending June 30, 1928. Quarterly dividends amounting to $1,347,500 were paid on preferred stock, while disbursements for common stock dividends totaled $3,080,000, resulting in a surplus reduction of $2,924,797.85.

In his statement to the stockholders, William H. Woodin, chairman of the board of directors, points out that, during the period under review, new locomotive buying by the railroad was at a low ebb with the result that the output of the locomotive plants was the smallest of any six months in the company's history. Profits of the Railway Steel-Spring Company, the statement says, were about the same as in the first six months of 1927.

Chairman Woodin continued to call attention to the financial resources of the company which, on June 30, 1928, included net current assets of $46,426,970.33, with $34,714,366.01 of cash and marketable securities. The statement closes with a prediction that a change for the better in locomotive buying is not far distant, after the period of inactivity, even though an immediate resumption of normal locomotive business is improbable. The consolidated income statement follows:

Consolidated Income Account of the AMERICAN LOCOMOTIVE COMPANY and its subsidiaries
(Including Railway Steel-Spring Company and Montreal Locomotive Works, Limited)
For the six months ended June 30, 1928

Net earnings from all sources:—		
After deducting manufacturing, maintenance and administrative expenses		$2,334,601.15
Depreciation on plants and equipment		766,560.00
		$1,568,041.15
Accrual for Federal taxes		65,339.00
Available Profit for the six months		$1,502,702.15
Dividends—		
Preferred stock	$1,347,500.00	
Common stock	3,080,000.00	4,427,500.00
Deficit after Dividends		$2,924,797.85

Trade Publications

NICKEL STEEL APPLICATIONS. — "User Experience—The Key to Future Nickel Steel Applications," is the title of a 16-page booklet issued by the International Nickel Company, 67 Wall street, New York, outlining the latest phase in its work to increase the use of nickel alloy steel. The advertisements in this booklet are intended to indicate the potential market represented by future nickel steel applications.

SUPERHEATER UNITS.—Superheater units, remanufactured vs. repaired are discussed in a booklet recently issued by the Superheater Company, 17 East Forty-second Street, New York. The booklet points out that damaged parts can be completely remanufactured at the Elesco plant, with original dimensions retained throughout. New return bends, new ball ends, and new bands and supports are applied.

Obituary

Donald C. Davis, mechanical engineer of the Gould Coupler Company, Depew, New York, who died July 31 at his residence in Buffalo, N. Y., was born on Dec. 1, 1878. Mr. Davis was graduated from Masten Park high school and served during the Spanish American War in the 202nd Regiment from which he was discharged in 1901. He was in the employ of the Niagara Lockport & Ontario Power Company as a draftsman during 1906 and 1907 and afterwards with the Gould Storage Battery Company until the fall of 1908. He was transferred to the Gould Coupler Company as chief draftsman in 1909 and in 1924 was promoted to mechanical engineer, which position he held at the time of his death.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to the Flick Construction Company, Chicago, for the grading, ballasting and track laying on a line between Cheyenne, Okla., and Pampa, Tex., 85 miles. This line is being constructed as an extension of the Clinton & Oklahoma Western and will connect with the Higgins (Tex.)-Clovis (N. M.) line of the Panhandle & Santa Fe at Pampa.

BEAVER, MEADE & ENGLEWOOD.—Bids for the construction of a 59-mile portion of the extension from Hooker, Okla., to Des Moines, N. M., were closed on July 28.

BEAVER, MEADE & ENGLEWOOD.—A contract for the construction of an extension from Hooker, Okla., to a point 20 miles west has been let to the Panhandle Construction Company, Oklahoma City, Okla., at a cost of about $445,000.

CHICAGO & NORTH WESTERN.—A contract for the construction of a power plant building at Madison, Wis., has been let to J. H. Kelly, Madison. With equipment, this plant is expected to involve an expenditure of about $25,000.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been let to the Railroad Water and Coal Handling Company, Chicago, for the construction of fuel oil stations at Bucklin, Kan., and Hutchinson. A contract for the construction of grade separation structures in the vicinity of Ninety-fifth and Yates streets, Chicago, has been let to Joseph E. Nelson & Sons, Chicago, at a cost of about $90,000.

EDWARD HINES WESTERN PINE COMPANY.—Permission either to construct a new line or acquire an existing line between Burns, Harney county, and Seneca, Grant county, Oregon, a distance of 50 miles, is sought in an application filed by this company with the Interstate Commerce Commission.

FORT WORTH & DENVER SOUTH PLAINS.—This company has requested the Interstate Commerce Commission for permission to construct a 1.37 mile spur off its main line at Lockney, Texas, to furnish industrial plants with transportation facilities.

FLORIDA EAST COAST.—This company has applied to the Interstate Commerce Commission for permission to construct a branch line from Belleglade 9½ miles to a point on the west bank of the Miami Canal, in Palm Beach county, Fla.

MISSOURI PACIFIC.—A contract for the construction of a water treating plant at Coffeyville, Kan., including a frame pump house, has been let to the Railroad Water and Coal Handling Company, Chicago.

NEW YORK CENTRAL.—A contract for the construction of a passenger station, drive-ways and platform at Goshen, Ind., has been let to the Ellington-Miller Company, Chicago, at a cost of about $50,000.

NEW YORK CENTRAL.—Six contracts have recently been awarded by this road. One, for the remodeling of transfer bridge "B" at 30th street, New York, went to the Jobson-Gifford Company, New York. A second for the reconstruction of five ferry bridges, slips and ferry houses at Weehawken, N. J., was awarded to the Geo. W. Rogers Construction Corporation, New York, while a third for additions and alterations to offices of the consolidated ticket office, New York, was given to David Kramer, Inc., New York. A contract involving the manufacture, delivery and installation of conveyors for a grain elevator at Weehawken, N. J., was awarded to the M. A. Long Co., Baltimore, Md. Another for additions to the power house of the road at Harmon, N. Y., went to J. F. Fitzgerald Construction Company, Boston, Mass., while the sixth was awarded to Lyons-Slattery Co., Inc., New York, for the construction of a yard between W. 41st and W. 42nd street, along 11th and 12th avenues, New York.

PACIFIC ELECTRIC.—This company plans the construction of a double-track bridge over the main channel of the Los Angeles river on the Glendale (Cal.)-Burbank line at a cost of about $133,000.

PENNSYLVANIA.—Plans for the expansion and improvement of Grogan yard, in North Columbus, Ohio, call for an expenditure of $4,000,000 of which $1,000,000 has just been authorized by the board of directors. The improvement program includes the separation of five existing highway crossings—Cleveland avenue, Essex avenue, Field avenue, Eleventh avenue, and Seventeenth avenue, and a relocation of the main tracks serving the Toledo division to permit an extension of Grogan yard tracks westward to a holding capacity of 125 cars each.

UNION PACIFIC.—A contract has been awarded by this road to Ryberg-Sorenson Inc., Salt Lake City, Utah, for the construction of a passenger station at Marysville, Kan.

WABASH.—A contract has been awarded by this road to Dwight P. Robinson & Co., Inc., for the construction of a passenger station at Delmar boulevard and Hodiamont avenue, St. Louis, Mo. The estimated cost of the project is $350,000.

REDUCTIONS of 20 per cent. on export shipments of grain and flour were provided in the new Rumanian railway freight tariff which became effective on July 1. Rates on timber remain unchanged since they were reduced some time ago. Imports generally benefit by decreases of from 15 to 20 per cent while special rates are being arranged on water borne goods imported through Galatz, Brailia and Constantza. Rates on gasoline are also reduced while those on gas oil, fuel oil and kerosene were increased.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the new Mexico Central which it controls to abandon a line between Torrance and Willard, N. M., 36 miles, and another between Santa Fe and Kennedy, 21.8 miles, with the proviso that first the Southern Pacific must be granted a right to take them over for operation at salvage value, access to these lines to be granted to the S.P. by means of trackage rights.

ATCHISON, TOPEKA & SANTA FE.—*Interest of Noteholders' Committee in Orient Acquired.*—This company has filed with the Interstate Commerce Commission an application for leave to be substituted for the English noteholders' protective committee as intervener in the proceedings on its application for authority to acquire control of the Kansas City, Mexico & Orient, stating that it has acquired all of the interests of the committee in the proceedings. At the time of its application the Santa Fe stated that it had subscription rights of 14,561, or 41 per cent of the 35,000 shares of the stock of the Orient and that most of the remainder of the stock was controlled by the English committee; but that it was prepared to acquire all or a majority of the stock at the price of $414.50 a share.

CENTRAL OF ARKANSAS.—*Abandonment.* The Interstate Commerce Commission has authorized this company to abandon 4.2 miles of line between Plainview, Ark., and Fourche Jct.

CHESAPEAKE & OHIO.—*Construction Authority Refused.*—The Interstate Commerce Commission has denied the application of this company for authority to extend its Logan sub-division from Gilbert, W. Va., to Mullens, 47.3 miles, and has taken similar action regarding its application to extend its Winding Gulf branch from Stone Coal, W. Va., to Mullens, 8.2 miles.

CHESAPEAKE & OHIO.—*Control of Pere Marquette.*—The Stockholders' Protective Committee of the Chesapeake & Ohio has filed a brief with the Interstate Commerce Commission opposing the petition of the C. & O. for a modification of the Commission's order so as to permit the purchase from the Nickel Plate of its holdings of Pere Marquette common at $133.33 instead of $110 a share. The committee headed by George S. Kemp states in its brief that the C. & O. petition does not set up any new matters which have arisen since the hearing on its application to acquire control of the Pere Marquette and the Erie, or the entry of the Commission's order of May 8, which in any way justify the prayer for modification of that order. The minority group declares that the C. & O. petition constituted a mere reiteration of the fact that it is unable to acquire Pere Marquette common held by the Nickel Plate at $110 a share and of the fact that the market price of the stock is substantially in excess of the price set forth in the original option granted by the Nickel Plate to the C. & O. to purchase the 174,900 shares held by it, both of which facts, it is stated, were fully known to the Commission at the time of the entry of its order on May 8.

The approval of the purchase of the Nickel Plate's holdings in Pere Marquette common at $133.33 per share, the price set forth in the present option agreement, says the brief of the C. & O. Stockholders' Protective Committee, would involve large additional profits to the Van Sweringen interests, who are the controlling interest in the Nickel Plate and are also the controlling interest in the Chesapeake. The Van Sweringen interests caused the Nickel Plate to acquire the 174,900 shares of Pere Marquette common stock now owned or controlled by it in contemplation of the consummation of their merger schemes, and they as owners of the majority stock of the Nickel Plate should not be allowed to profit by the sale of these stocks to the Chesapeake, which they also control at a price greatly in excess of the prices at which they caused said stocks to be acquired by the Nickel Plate.

The price of $133.33 per share for Pere Marquette common stock is largely in excess of its value to the Chesapeake, the stockholders' protective committee represents, and it is not in the public interest that the Chesapeake should purchase this stock at such a price when it is shown by the record in this case that the Chesapeake has urgent and unprovided for requirements for improvements on its own lines which would yield a return largely in excess of the return on the investment required to acquire Pere Marquette common at the price which it now proposes to pay for the Nickel Plate's holdings.

CENTRAL OF NEW JERSEY.—*Acquisition of Control.*—The Interstate Commerce Commission has authorized this company to acquire control of the Hibernia Mine Railroad by purchase of capital stock. The road runs from a connection with the Jersey Central at Rockaway, N. J., to Hibernia, 4.3 miles, and has been operated by the applicant under lease since 1891. The lease will expire in 1930 and the Jersey Central states that it has been offered 1,707 of the road's 2,000 shares at $60 each.

CHICAGO, SPRINGFIELD & ST. LOUIS.—*Acquires Jacksonville & Havana.*—The Illinois Commerce Commission on July 31 gave this railroad authority to acquire the properties of the Jacksonville & Havana. Under the plan which was approved by the commission the C., S. & St. L. will issue $3,000,000 of capital stock, about half of which will be available for new equipment and rehabilitation of the two properties. The commission also gave this company permission to operate its trains over the tracks of the Chicago, Burlington & Quincy between Jacksonville, Ill., and Waverly, 18 miles, thus forming a physical connection between the C., S. & St. L. and the J. & H.

CINCINNATI, NEW ORLEANS & TEXAS PACIFIC.—*Cincinnati Southern Lease Executed.*—The lease of the Cincinnati Southern to this company for the period from January 1, 1928, to December 31, 2026, as ratified by the people of Cincinnati (Ohio) at an election in November, 1927, was formally executed at Cincinnati on August 1. The execution of the instruments involved in the lease was delayed by a series of suits, the purpose of which was to prevent the entrance of the city into the lease extension contract. These suits were lost in the Circuit Court of Appeals and the case was dis-

missed by the Interstate Commerce Commission.

DELAWARE & HUDSON.—*Abandonment.*—The Interstate Commerce Commission has refused to permit this company to abandon its Honesdale branch, 27.7 miles, in northeastern Pennsylvania. This branch covers the territory served by the Delaware & Hudson's first rail line, a gravity affair with inclined planes built when the company was primarily a canal carrier. The line has heavy grades and a switchback and is nearly twice as long as an improved highway traversing the district. The commission believes that passenger service might be abandoned, but not the freight service.

GUYANDOT & TUG RIVER.—*Construction Authorized.*—The Interstate Commerce Commission has authorized this subsidiary of the Norfolk & Western to construct a line from Gilbert, W. Va., to Wharncliffe, 10.5 miles.

ILLINOIS CENTRAL. — *Abandonment.* — This company and the Mississippi Valley which it controls have been authorized by the Interstate Commerce Commission to abandon 20 miles of line from a connection with the New Orleans Great Northern near Monticello, Miss., to a connection with the Meridian, Brookhaven & Natchez near Brookhaven.

KANSAS CITY SOUTHERN.—*Anti Trust Proceeding Set for Hearing.*—The Interstate Commerce Commission has assigned its proceedings involving complaints against the Kansas City Southern and the Missouri-Kansas-Texas for alleged violation of the Clayton anti-trust law for hearing at Dallas, Tex., on September 17 before C. D. Mahaffie, director of the Bureau of Finance. This is the date previously set for the hearing on the application of the Missouri-Kansas-Texas for authority to acquire control of the K. C. S. and St. Louis Southwestern, or either of them.

MONONGAHELA. — *Acquisition.* — This company has applied to the Interstate Commerce Commission for authority to purchase the properties of the Chartiers Southern, which it operates under lease, and of which it owns all the capital stock.

WHITE RIVER.—*Receiver's Certificates.*—The Interstate Commerce Commission has authorized this company to issue not exceeding $160,000 of 5 per cent receiver's certificates.

Average Prices of Stocks and of Bonds

	Aug. 7	Last week	Last year
Average price of 20 representative railway stocks.	118.55	118.79	117.88
Average price of 20 representative railway bonds..	92.64	92.50	94.68

Dividends Declared

Alabama & Vicksburg.—3 per cent, semi-annually, payable October 1 to holders of record September 8.

Buffalo, Rochester & Pittsburgh.—2 per cent, quarterly; preferred, 3 per cent, quarterly, both payable August 15 to holders of record August 6.

Vicksburg, Shreveport & Pacific.—Common, 2½ per cent, semi-annually; preferred, 2½ per cent, semi-annually, both payable October 1, to holders of record September 8.

Officers

Executive

W. S. McAbee, general superintendent of the Union Railroad, with headquarters at East Pittsburgh, Pa., has been elected vice-president. He will continue to serve as general superintendent.

John C. Otteson, vice-president, secretary and treasurer of the Wabash, with headquarters at New York, has retired from active service after having served for practically 52 years with that company. Mr. Otteson was born on September 18, 1857, at Elizabeth, N. J., and was educated in the public schools and Metropolis Law School. He entered the service of the Toledo, Wabash & Western (now part of the Wabash) in the fall of 1876 as a clerk. He was appointed secretary of the Wabash Western in November, 1888, and, in August of the same year, he became secretary of the Wabash Railroad. In April, 1900, he

John C. Otteson

was appointed assistant treasurer of the same road and in January, 1915, he was promoted to the position of vice-president. He served as secretary and assistant treasurer of the Wabash Railway from December, 1915, to April, 1916, when he was appointed vice-president of the same road. He was also appointed treasurer of the Wabash in August, 1916, and served in the capacity of vice-president, secretary and treasurer of that road until the time of his retirement.

Howard E. Stevens, chief engineer of the Northern Pacific, with headquarters at St. Paul, Minn., has been appointed vice-president in charge of operation, with headquarters at the same point, succeeding **F. E. Williamson,** who resigned to become executive vice-president of the Chicago, Burlington & Quincy. Mr. Stevens was born on March 8, 1874, at Bluehill, Me., and graduated from a course in civil engineering at the University of Maine in 1897. For three years after his graduation he was engaged in survey and bridge work and in 1900 he was associated with Ralph Modjeski, construction engineer, Chicago, on bridge design, fabrication, and construction, which included, among other structures, the bridge over the Mississippi river at Thebes, Ill. Mr. Stevens entered the service of the Northern Pacific in 1904 as a draftsman in the bridge department. Later he was advanced to assistant engineer, specializing on steel bridge de-

Howard E. Stevens

sign and erection, and in February, 1907, he was promoted to bridge engineer. In October, 1916, he was again promoted to chief engineer. Mr. Stevens' appointment as vice-president in charge of operation became effective on August 10.

Financial, Legal and Accounting

Miss Mary Otteson, assistant secretary on the Wabash, has retired from the service of that road after having served nearly 39 years with the company.

C. C. Strong has been appointed insurance engineer of the Chesapeake & Ohio, with headquarters at Richmond, Va. In preparing insurance schedules and reports in support of claims for fire loss, Mr. Strong will report to the secretary.

A. P. Hall has resumed his duties as superintendent of the Galveston division of the Gulf, Colorado & Santa Fe, with headquarters at Galveston, Tex., following a leave of absence. **J. P. Cowley,** acting superintendent of the Galveston division, has been assigned to other duties.

William B. Collinson, assistant land commissioner of the Santa Fe Pacific Railroad Company, a subsidiary of the Atchison, Topeka & Santa Fe, controlling the land grant rights of the latter railroad, has been promoted to land commissioner of the subsidiary company with headquarters at Topeka, Kan., succeeding **Howel Jones,** deceased.

Operating

J. A. Greig, road foreman of engines of the Missouri Pacific with headquarters at Jefferson City, Mo., has been appointed assistant trainmaster of the St. Louis district with the same headquarters.

Sherman Smith, assistant superintendent of the Edson division of the Canadian National, with headquarters at Edson, Alta., has been transferred to the Calgary division, with headquarters at Calgary, Alta., succeeding **J. D. Healy,** who has been transferred to the Edmonton division, with headquarters at Edmonton, Alta. **W. Smith** has been appointed assistant superintendent of the Edson division to replace Sherman Smith.

Don Stewart Colby, who has been promoted to division superintendent of the Dakota division of the Northern Pacific with headquarters at Jamestown, N. D., was born on May 13, 1883, at Ypsilanti, N. D., and entered railway service as a freight trucker at Jamestown, N. D., in September, 1902, on the Northern Pacific. In the following year he became a freight brakeman which position he held until March, 1906, when he was promoted to freight conductor. In May, 1917, he was promoted to trainmaster, and from October, 1917, to July, 1920, he served in the Russian Railway Service Corps in Siberia. He returned to the Dakota division of the Northern Pacific as trainmaster, and in November, 1920, he was transferred to the Pasco division, with headquarters at Yakima, Wash. From June, 1925, to August of the same year he was acting superintendent on the Montana division and from the latter date to March, 1926, served as trainmaster of the Pasco division. In August, 1927, he was appointed assistant division superintendent on the Fargo division with headquarters at Staples, Minn., which position he has held until his recent promotion.

Don Stewart Colby

Traffic

Sheldon A. Volkman, general agent of the Great Northern with headquarters in Minneapolis, Minn., has been promoted to assistant general freight agent with the same headquarters.

A. T. Stewart, formerly general freight agent of the Missouri Pacific at Kansas City, Mo., until his resignation in 1917 to enter the oil business has been appointed assistant general freight agent, of that railroad, with headquarters at St. Louis, Mo.

J. L. Lumsden, division freight and passenger agent of the Illinois Central at Sioux City, Iowa, has been promoted to assistant coal traffic manager, with headquarters at Chicago.

J. A. Sullivan assistant general freight agent of the Wabash at Detroit, Mich., has been promoted to assistant freight traffic manager, with headquarters at the same point. **R. A. Walton,** assistant general freight agent at Chicago, has been promoted to assistant freight traffic manager, with headquarters at the same point. The positions of assistant general freight agent at Detroit and Chicago have been abolished. **C. V. Ecclestone,** traveling freight agent at Los Angeles, Cal., has been promoted to general agent of the freight department at that point, succeeding **Ross C. Cline,** who, at his own request, has been relieved of the duties of general agent and has been appointed special traffic representative at Los Angeles.

Engineering, Maintenance of Way and Signaling

Corbett W. Coil, roadmaster on the Rocky Mountain division of the Northern Pacific at Helena, Mont., has been appointed acting division roadmaster of the Fargo division, with headquarters at Fargo, N. D.

E. Bennett, engineer maintenance of way on the Southern, with headquarters at Macon, Ga., has been appointed engineer maintenance of way at Knoxville, Tenn., succeeding **J. A. Killian,** deceased. Effective August 1, the office of engineer maintenance of way, Charlotte, N. C., is abolished and the jurisdiction of engineers maintenance of way at Danville and Knoxville are extended to include the entire Piedmont and Memphis and Charleston districts respectively.

Wilson H. Stillwell, who has been promoted to signal engineer of the Louisville & Nashville, with headquarters at Louisville, Ky., has been connected with the signal department of that railroad for nearly 14 years. He was born on April 9, 1885, at Windsor, N. Y., and graduated from Syracuse University in 1910. In June of the latter year Mr. Stillwell entered railway service as a draftsman on the New York Central, Lines East. During 1910 he was advanced successively to assistant signal maintainer and signal maintainer and in April, 1912, he was promoted to inspector of signal construction. The following year he was appointed circuit designer at the Grand Central Terminal, New York, where he remained until November, 1914, when he became signal supervisor of the Kentucky division of the Louisville & Nashville at Paris, Ky.

Wilson H. Stillwell

In 1923 Mr. Stillwell was promoted to assistant signal engineer, with headquarters at Louisville. From late in 1926 until his promotion to signal engineer in July, 1928, he served as acting signal engineer.

James S. Thorp, assistant electrical engineer of the Chicago Terminal Improvements of the Illinois Central, with headquarters at Chicago, has been appointed electrical traction engineer of the Delaware, Lackawanna & Western, with headquarters at Hoboken, N. J., effective August 6. This is a newly created position on the Lackawanna. Mr. Thorp was born at Gainesville, Va., on February 1, 1885, and entered railway service at the age of 17 years as a machinist's apprentice on the Southern at Spencer, N. C. Four years later he entered Virginia Polytechnic Institute, graduating from courses in mechanical and electrical engineering in 1910. Mr. Thorp also served as a machinist with the Central of Georgia, the Norfolk & Western, the Atlantic Coast Line and the Carolina, Clinchfield & Ohio (now the Clinchfield). In 1912 he became a

James S. Thorp

draftsman on the electrification of the New York, New Haven & Hartford between Stamford, Conn., and New Haven, where he remained until September, 1913, when he was appointed assistant engineer on the Norfolk & Western electrification. For a period prior to 1917 when he was employed in the engineering department of the Air Nitrates Corporation at Muscle Shoals, Ala., Mr. Thorp served as senior assistant engineer for the British Insulated & Helsby Cables Company on the Victorian Railways electrification at Melbourne, Australia. From 1919 to 1923 he was plant manager for an electrical porcelain manufacturer, then becoming distribution engineer of the Illinois Central Terminal Improvements at Chicago. He was promoted to assistant electrical engineer on September 1, 1927.

Mechanical

J. W. Highleyman, who has been promoted to superintendent of motive power and machinery of the Oregon Short Line with headquarters at Pocatello, Idaho, was born on December 24, 1868, at Spencer, W. Va., and entered railway service in July, 1886, as a machinist apprentice on the Missouri Pacific. From 1893 to 1898 he was a machinist on the Union Pacific at Kansas City, Mo., and during the latter year was promoted to general foreman at Junction City, Kan. In 1899 he was transferred to Kansas City where he remained until 1906 when he was appointed district foreman with headquarters at Laramie, Wyo. In May, 1912, he was promoted to master mechanic at Cheyenne, Wyo., which position he held until August, 1923. This portion of his career was interrupted from March, 1918, to April, 1919, by his service in France. In August, 1923, he was promoted to assistant superintendent of motive power and machinery with headquarters at Omaha, which position he has held until his recent promotion.

C. J. Bodemer, acting superintendent of machinery of the Louisville & Nashville, with headquarters at Louisville, Ky., has been promoted to superintendent of machinery, with headquarters at the same point. He has been in the service of the mechanical department of that railroad for 28 years. Mr. Bodemer was born on March 8, 1880, at Cincinnati, Ohio, and, after completing a course in the Cincinnati Technical School, graduated from a course in mechanical engineering at Purdue University in June, 1900. In August, 1900, he entered the service of the L. & N. as an apprentice, later being advanced to erecting shop foreman at Covington, Ky., where he remained until February, 1905, when he was transferred to the South Louisville (Ky) shops. Mr. Bodemer was then advanced to assistant general foreman at the South Louisville shops and until 1919 he served successively in that position, as general foreman of the Etowah (Tenn.) shops, as general foreman of locomotive repairs and assistant master mechanic at South Louisville and as master mechanic at the Decatur (Ala.) shops. On March 1, 1919, he was promoted to assistant superintendent of machinery, with headquarters at Louisville. Mr. Bodemer's appointment as acting superintendent of machinery became effective on August 15, 1927.

Obituary

F. C. Gay, formerly general freight agent of the Atchison, Topeka & Santa Fe, and traffic manager of the Arkansas Western, died on July 4 at his home at Lawrence, Kan. He served as assistant general freight agent of the Santa Fe at Kansas City, Mo., prior to 1889 and from that date until 1899 he was general freight agent at Topeka, Kan. Mr. Gay was traffic manager of the Arkansas Western, with headquarters at Kansas City, during 1902 and 1903.

Luke Kelly, for many years engaged in railway construction, died on August 1 after a heart attack. Mr. Kelly was 76 years of age. He was actively associated with the construction of the Canadian Pacific through the Rocky Mountains, the building of the Prince Edward Island Railway and the Transcontinental Railway at Grand Falls. The Grand Falls was his last construction work, after the completion of which he retired to engage in farming.

John P. Flynn, assistant general superintendent and auditor of the Monterey & Mexican Gulf (now a part of the National of Mexico), with headquarters at Monterey, Mex., from 1890 to 1895, died at Toronto, Ont., on July 27. Mr. Flynn had been a train dispatcher on the Chicago & North Western at Chicago and in 1884 he financed and constructed at Laredo, Tex., one of the first electric street car lines in the West.

William A Parker, purchasing agent for the Bessemer & Lake Erie and the Union Railroad Company, with headquarters at Pittsburgh, Pa., died on August 6 at Hesston, Huntingdon County, Pa. Mr. Parker entered the service of the Bessemer & Lake Erie in August, 1897, as a stenographer in the purchasing department and in December, 1904, he was appointed purchasing agent, in which position he served until the time of his death. He also served in the same capacity for the Union Railroad Company.

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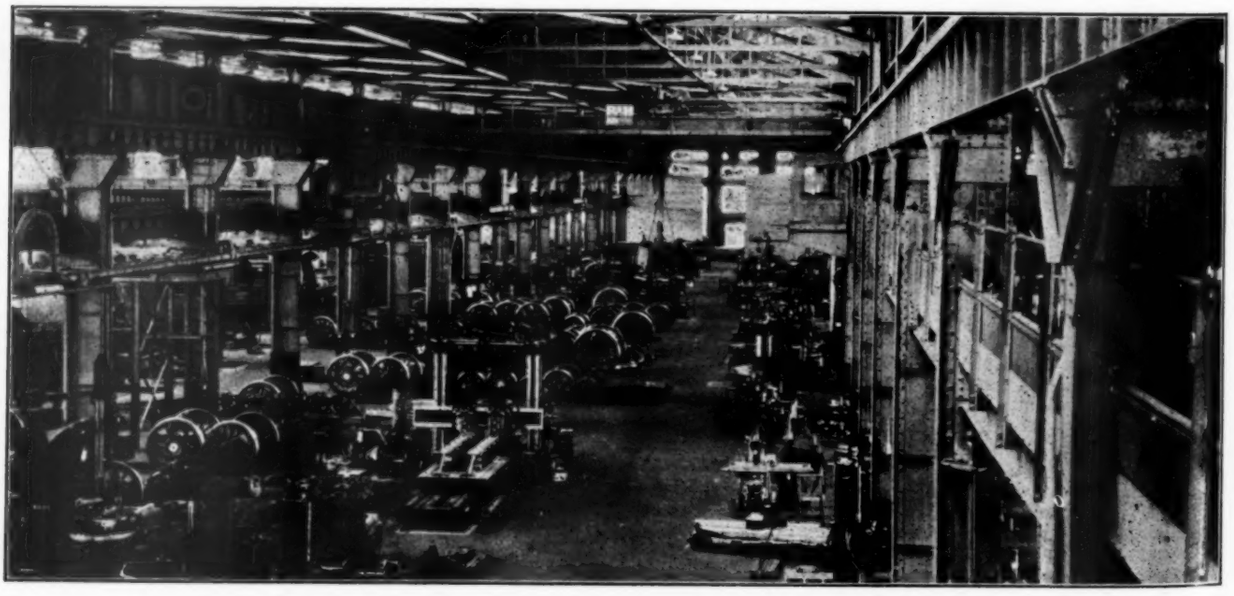

View of Machine Bay Adjoining Locomotive Erecting Shop